5740

Order No.MTNC040102A1
B19

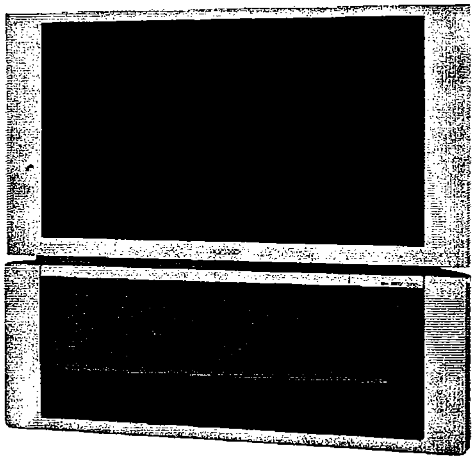
Service Manual

HDTV MONITOR

PT-53TWD63G
PT-56TWD63G

P9

Simplificado



This simplified service manual is issued to add listed models to the main service manual order No. MTNC031147C1(PT-47WXD63G). A complete parts list and schematics are included in this simplified service manual. Please file and use this simplified service manual together with the main service manual order No. MTNC031147C1(PT-47WXD63G).

⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are marked by ⚠ in the Schematic Diagrams, Circuit Board Diagrams, Exploded Views and Replacement Parts List. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire or other hazards. Do not modify the original design without permission of manufacturer.

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1 Safety precautions

General guidelines

An isolation transformer should always be used during the servicing of a receiver whose chassis is not isolated from AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resulting in personal injury from electrical shocks. It will also protect the receiver from being damaged by accidental shorting that may occur during servicing.

When servicing, observe the original lead dress, especially in the high voltage circuit. Replace all damaged parts (also parts that show signs of overheating.)

Always replace protective devices, such as fish paper, isolation resistors and capacitors, and shields after servicing the receiver. Use only manufacturer's recommended rating for fuses, circuits breakers, etc.

High potentials are present when this receiver is operating. Operation of the receiver without the rear cover introduces danger for electrical shock. Servicing should not be performed by anyone who is not thoroughly familiar with the necessary precautions when servicing high voltage equipment.

Extreme care should be practiced when handling the picture tube. Rough handling may cause it to implode due to atmospheric pressure. (14.7 lbs per sq. in.). Do not nick or scratch the glass or subject it to any undue pressure. When handling, use safety goggles and heavy gloves for protection. Discharge the picture tube by shorting the anode to chassis ground (not to the cabinet or to other mounting hardware). When discharging connect cold ground (i.e. dag ground lead) to the anode with a well insulated wire or use a grounding probe.Avoid prolonged exposure at close range to unshielded areas of the picture tube to prevent exposure to x ray radiation.

The test picture tube used for servicing the chassis at the bench should incorporate safety glass and magnetic shielding. The safety glass provide shielding for the tube viewing area against x ray radiation as well as implosion. The magnetic shield limits the x ray radiation around the bell of the picture tube in addition to the restricting magnetic effects. When using a picture tube test jig for service, ensure that the jig is capable of handling 50kV without causing x ray radiation.

Before returning a serviced receiver to the owner, the service technician must thoroughly test the unit to ensure that is completely safe to operate. Do not use a line isolation transformer when testing.

Leakage current cold check

Unplug the A.C. cord and connect a jumper between the two plug prongs.Measure the resistance between the jumpered AC plug and expose metallic parts such as screwheads, antenna terminals, control shafts, etc. If the exposed metallic part has a return path to the chassis, the reading should be between 240kΩ and 5.2MΩ. If the exposed metallic part does not have a return path to the chassis, the reading should be infinite.

Leakage current hot check

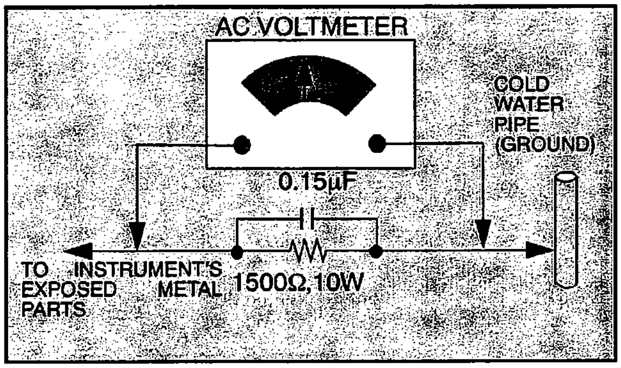
Plug the AC cord directly into the AC outlet. Do not use an isolation transformer during the check.

Connect a 1.5kΩ 10 watt resistor in parallel with a 0.15µF capacitor between an exposed metallic part and ground. Use earth ground, for example a water pipe.

Using a DVM with a 1000 ohms/volt sensitivity or higher, measure the AC potential across the resistor.

Repeat the procedure and measure the voltage present with all other exposed metallic parts.

Verify that any potential does not exceed 0.75 volt RMS. A leakage current tester (such a Simpson model 229, Sencore model PR57 or equivalent) may be used in the above procedure, in which case any current measure must not exceed 0.5 milliampere. If any measurement is out of the specified limits, there is a possibility of a shock hazard and the receiver must be repaired and rechecked before it is returned to the customer.



Hot check circuit

Insulation test

Connect an insulation tester between an exposed metallic part and A.C. line. Apply 1080VAC/60Hz for 1 second. Confirm that the current measurement is 0.5mA ~ 2.0mA. Repeat test with other metallic exposed parts.

X-ray radiation

WARNING

The potential source of x-ray radiation in the PTV set is in the high voltage section and the picture tube.

NOTE

It is important to use an accurate, calibrated high voltage meter.

Apply all black video signals (1080i) and confirm high voltage measures 31.5 ± 1.0kV. If the high voltage is not within the range, change C514 (in D-Board) to 1800pF, 2000pF, 2400pF or 2700pF until the desired value is obtained.Apply NTSC white pattern and confirm the high voltage measures 30.1 ± 1.5kV. Apply HD 1080i white pattern and confirm the high voltage measures 30.1 ± 1.5kV.

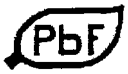
2 About lead free solder (PbF)

NOTE

Lead is listed as (Pb) in the periodic table of elements.
In the information below, Pb will refer to lead solder, and PbF will refer to Lead Free Solder.
The lead free solder used in our manufacturing process and discussed below is (Sn+Ag+Cu).
That is Tin (Sn), Silver (Ag) and Copper (Cu) although other types are available.

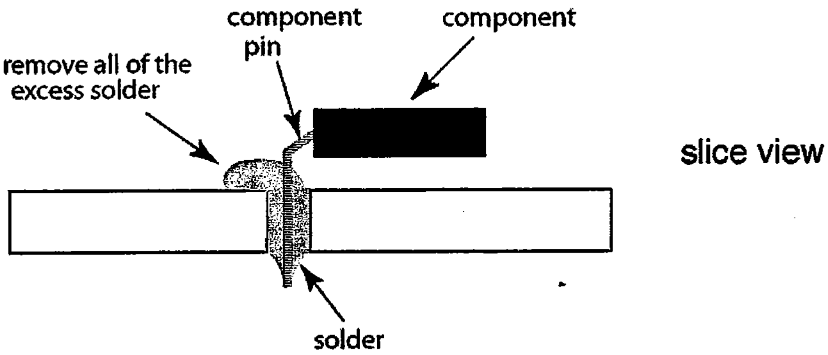
This model uses Pb Free solder in it's manufacture due to environmental conservation issues. For service and repair work, we'd suggest the use of Pb free solder as well, although Pb solder may be used.

PCBs manufactured using lead free solder will have the "PbF" or a leaf symbol stamped on the back of PCB.



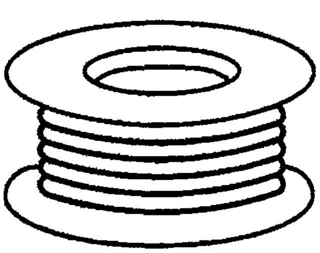
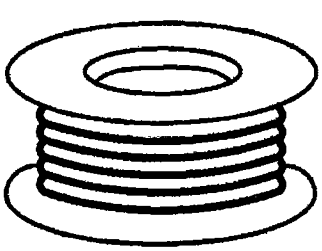
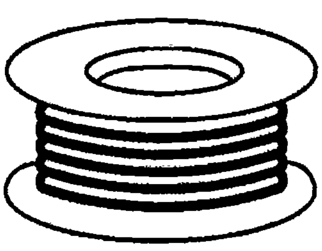
CAUTION

- Pb free solder has a higher melting point than standard solder. Typically the melting point is 50 ~ 70 °F (30 ~ 40 °C) higher. Please use a high temperature soldering iron and set it to 700 ± 20 °F (370 ± 10 °C).
- Pb free solder will tend to splash when heated too high (about 1100 °F or 600 °C).
  If you must use Pb solder, please completely remove all of the Pb free solder on the pins or solder area before applying Pb solder. If this is not practical, be sure to heat the Pb free solder until it melts, before applying Pb solder.
- After applying PbF solder to double layered boards, please check the component side for excess solder which may flow onto the opposite side.



Suggested Pb free solder

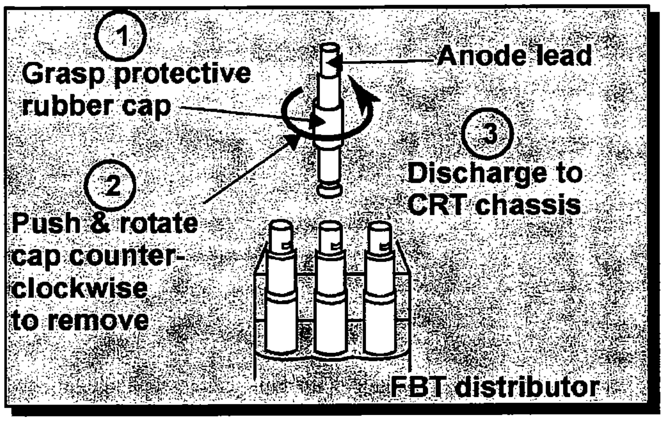
There are several kinds of Pb free solder available for purchase. This product uses Sn+Ag+Cu (tin, silver, copper) solder. However, Sn+Cu (tin, copper), Sn+Zn+Bi (tin, zinc, bismuth) solder can also be used.

0.3mm X 100g	0.6mm X 100g	1.0mm X 100g
		

3 Important safety tests

Measuring H.V.

The anode caps are cemented to the CRTs. To gain access for high voltage measurement, remove the red CRT's anode lead from the flyback transformer distributor. Grasp the anode lead protective cap at its bottom and squeeze it against the locking cap body inside, rotate 1/4 turn counter clockwise and pull the anode lead sleeve out of the FBT distributor. Connect a high voltage positive lead from your H.V. meter to the FBT distributor, and the common negative lead to cold ground


①
Grasp protective rubber cap
Anode lead
③
Discharge to CRT chassis
②
Push & rotate cap counter-clockwise to remove
FBT distributor

FBT leads removal

Note:

Reinsert the anode lead into the FBT distributor until it is tightly and fully seated. Turn the locking cap clockwise to lock in place.

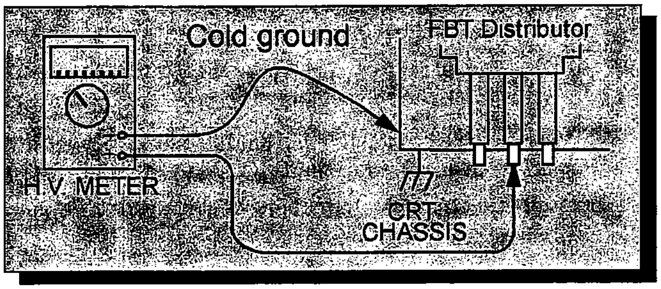
(EHT) Protector operation check

With the cabinet back removed, apply a nominal 120V A.C. to the PTV.

Over voltage test

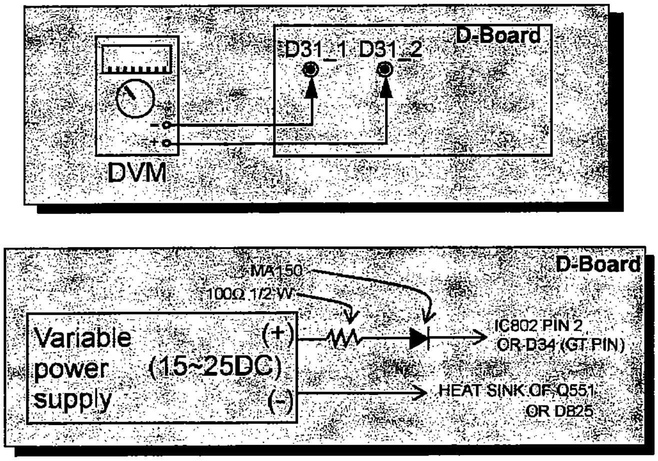
Preparation:

1. Turn PTV "OFF"
2. Connect a NTSC signal generator to the antenna terminal.
3. Connect DVM positive lead to D31 pin 2 and negative lead to D31 pin 1 on D-Board


Cold ground
FBT Distributor
H.V. METER
CRT CHASSIS

H.V. measurement

4. Connect a H.V. meter (static type, class 0.1) with high voltage leads to high voltage distributor on FBT.


D31_1
D31_2
D-Board
-
+
DVM
D-Board
MA150
100Ω 1/2 W
Variable power supply
(15~25DC)
(+)
(-)
IC802 PIN 2 OR D34 (GT PIN)
HEAT SINK OF Q551 OR D825

DVM and power supply connection

5. Connect the 15 ~ 25 V DC variable power supply positive lead to D34 or IC802 pin 2 (D Board) and negative lead to heat sink of Q551 or D825

Procedures:

1. Apply a NTSC white pattern.
2. Turn PTV ON.
3. Adjust the picture or brightness controls so that the DVM reads 12.4 ± 0.4 volts.
4. Increase the variable power supply until set turns off. The set should turn off at 12.4 ± 0.4 volts (DVM) and high voltage less than 36.4kV.
5. If the DVM reading is other than 12.4 ± 0.4 volts, readjust picture or brightness control and repeat steps 3.
6. Turn off the variable supply and confirm that the set will turn on by pulling out AC plug socket and connecting it again.

4 Service notes

NOTE

These components are affixed with glue. Be careful not to break or damage any foil under the component or at the pins of the ICs when removing. Usually applying heat to the component for a short time while twisting with tweezers will break the component loose.

Leadless chip component (surface mount)

Chip components must be replaced with identical chips due to critical foil track spacing. There are no holes in the board to mount standard transistors or diodes. Some chips capacitor or resistor board solder pads may have holes through the board, however the hole diameter limits standard resistor replacement to 1/8 watt. Standard capacitor may also be limited for the same reason. It is recommended that identical components be used.

Chip resistor have a three digit numerical resistance code, 1st and 2nd significant digits and a multiplier. Example: 162 = 1600 or 1.6kΩ resistor, 0 = 0Ω (jumper).

Chip capacitors generally do not have the value indicated on the capacitor. The color of the component indicates the general range of the capacitance.

Chip transistors are identified by a two letter code. The first letter indicates the type and the second letter, the grade of transistor.

Chip diodes have a two letter identification code as per the code chart and are a dual diode pack with either common anode or common cathode. Check the parts list for correct diode number.

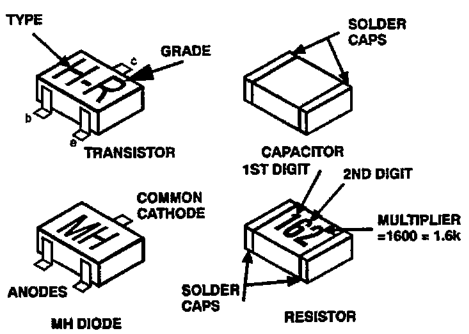
Component removal

1. Use solder wick to remove solder from component end caps or terminal.
2. Without pulling up, carefully twist the component with tweezers to break the adhesive.
3. Do not reuse removed leadless or chip components since they are subject to stress fracture during removal.

Chip component installation

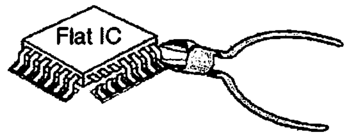
1. Put a small amount of solder on the board soldering pads.
2. Hold the chip component against the soldering pads with tweezers or with a miniature alligator clip and apply heat to the pad area with a 30 watt iron until solder flows. Do not apply heat for more than 3 seconds.

Chip components

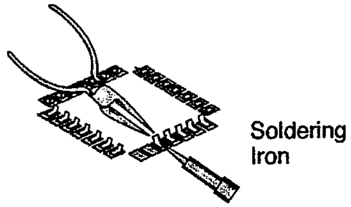


How to replace flat ic (required tools)

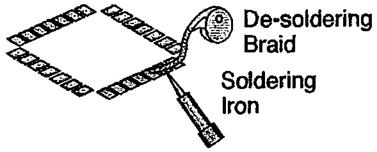
1. Remove the solder from all of the pins of a Flat IC by using a desolder braid



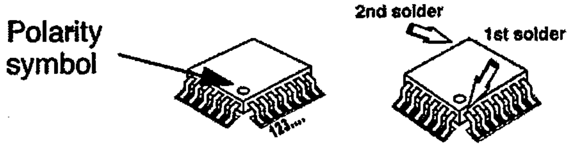
2. Put the iron wire under the pins of the Flat IC and pull it in the direction indicated while heating the pins using a soldering iron. A small awl can be used instead of the iron wire.



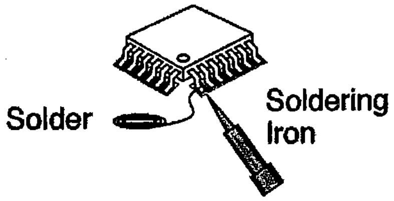
3. Remove the solder from all the pads of the Flat IC by using a de solder braid



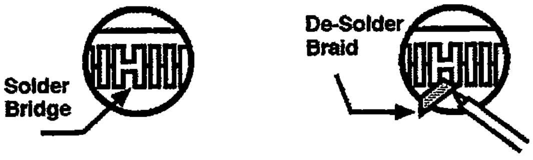
4. Position the new Flat IC in place (apply the pins of the Flat IC to the soldering pads where the pins need to be soldered). Properly determine the positions of the soldering pads and pins by correctly aligning the polarity symbol



5. Solder all pins to the soldering pads using a fine tipped soldering iron



6. Check with a magnifier for solder bridge between the pins or for dry joint between pins and soldering pads. To remove a solder bridge, use a desolder braid as shown in the figure below



IMPORTANT

To protect against possible damage to the solid state devices due to arcing or static discharge, make certain that all ground wires are securely connected

CAUTION

The power supply circuit is above earth ground and the chassis cannot be polarized. Use an isolation transformer when servicing the receiver to avoid damage to the test equipment or to the chassis. Connect the test equipment to the proper ground (HOT or COLD) when servicing, or incorrect voltages will be measured.

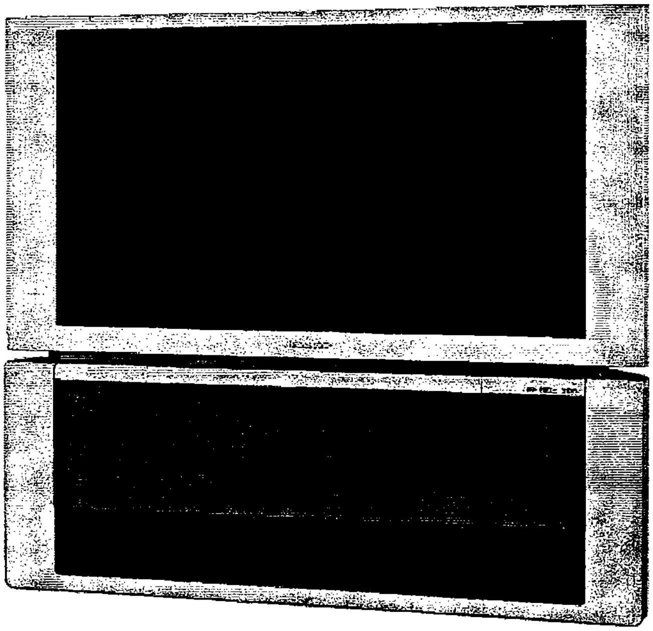
WARNING

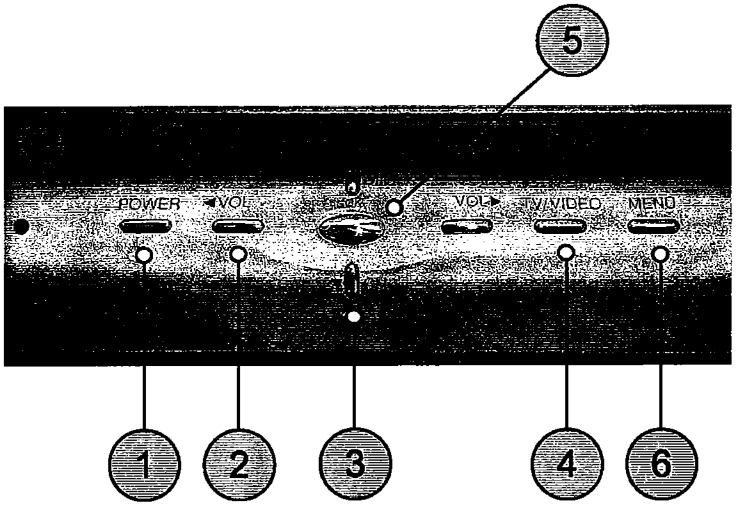
This receiver has been designed to meet or exceed applicable safety and x-ray radiation protection as specified by government agencies and independent testing laboratories.

To maintain original product safety design standards relative to x-ray radiation and shock and fire hazard, parts indicated with the symbol ⚠ on the schematic must be replaced with identical parts. Order parts from the manufacturer's parts center using the parts numbers shown in this service manual, or provide the chassis number and the part reference number.

For optimum performance and reliability, all other parts should be replaced with components of identical specification.

5 PTV Location of controls





QUICK REFERENCE BUTTON OPERATION

① **POWER** - Press to turn ON or OFF.

② **VOLUME** - Press to adjust sound level, settings and features on menu.

③ **CHANNEL** - Press to select programmed channels. Press to highlight desired features when menus are displayed.

④ **TV/VIDEO** - Press to select TV or one of the video inputs.

⑤ **OK** - Press to choose menu and sub-menu entry.

⑥ **MENU** - Press to display main menu or return one step backward in menus.

6 Receiver feature table

FEATURE/MODEL	PT-53TWD63G PT-56TWD63G
CHASSIS	BP830
MICRO	256K
MENU LANGUAGE	ENGLISH
CLOSED CAPTION	X
V-CHIP (USA/CANADA)	X
CHANNEL INFO BANNER	X
ATSC / QAM TUNING	X
VIDEO INPUT SKIP	SKIP
CHANNEL COUNT	181
PIP (1T), 2T PIP (2T), 2T SPLIT	2T SPLIT
2RF	X
REMOTE CONTROL (W/LIGHT)	EUR7627Z10
CRT SUPPLIER	MDDA (CENTAUR)
SCREEN	W/PROT SCREEN
CHASSIS	P9
COMB FILTER	MOTION ADP, 3D Y/C
HEC/VEC (X=BOTH)	X
NEW YNR	X
VM	X (DIGITAL)
V/A NORM (X=BOTH)	X
COLOR TEMP	X
AIP	X
PRESET/INPUT LABELING	X
VIDEO PICTURE MEMORY	X
DIGITAL SCAN RATE	1080i, 540p
NTSC LINE DOUBLER	540p PROGRESSIVE (NEW)
MTS/SAP/DBX	X
BUILT-IN AUDIO POWER	60W
No. OF SPEAKERS	6
BASS/BALANCE/TREBLE CONTROL	X
AI SOUND	X
SURROUND	X
SPATIALIZER/BBE	BBE/VIVA
A/V IN (REAR/FRONT)	4(3/1)
A/V PROGRAM OUT	X
AUDIO OUT (FAO: F, VAO:V)	F
COMPONENT INPUT (Y, Pb, Pr)	2
S-VIDEO INPUT (REAR/FRONT)	2/1
HDMI/HDCP INPUT	1
DIGITAL AUDIO OUT (AC-3/PCM)	1
CableCARD Slot	1(BACK)
(PCMCIA/SD)	1(FRONT)

Note:

Specifications are subject to change without notice or obligation.

7 Board description table

BOARD	PART NUMBER	DESCRIPTION
A-BOARD	TNP2AH051AB	MAIN CHASSIS
D-BOARD	TNP2AH056	POWER SUPPLY
* DC-BOARD	TNP2AA151	CONVERGENCE CIRCUIT
* DG-BOARD	TNP2AA132	MPU, VIDEO SIGNAL PROCESSING
* DV-BOARD	TNP2AA133	HDMI DECODIFIER
* DT-BOARD	TNP2AA144	HIGH DEFINITION TUNER
G-BOARD	TNP2AA137AA	FRONT A/V INPUT
H-BOARD	TNP2AA134	REAR A/V INPUTS
K-BOARD	TNP2AA138AA	KEYBOARD PANEL
* JG-BOARD	TNP2AA140	SD,PC JPEG VIEWER
LB-BOARD	TNP2AA147AB	BLUE PRT
LG-BOARD	TNP2AA146AB	GREEN PRT
LR-BOARD	TNP2AA145AB	RED PRT
R-BOARD	TNPA0615AB	IR SENSOR
T-BOARD	TNP2AA136	SUB-POWER

NOTE

When ordering a replacement board assembly, append an “S” to the board number

EXAMPLE

To order the A Board, the replacement board is TNP2AH051ABS

*

DC-Board, DG-Board, DV-Board, DT-Board and JG-Board are non-serviceable boards, except for the connectors JG1, JG2, JK5001, JK5002, JK8002 and JK8003. If any of these boards are defective, replace it with a new one.

8 Auto diagnosis feature

This receiver incorporates a self diagnosis feature. With this feature it will be easier for the technician to detect failures. There is a LED located by the keyboard on the front panel, this LED will start flashing when SOS is detected by the circuits located in specific areas, depending on how many times the LED is flashing, this will indicate what circuit should be checked. Make a count of flashing and see the table shown below. Please use this feature effectively especially for intermittent problems.

NUMBER OF FLASHES	POSSIBLE CAUSE
1	POWER SUPPLY AND/OR VERTICAL
2	IC1006 (DG-BOARD)
3	CONVERGENCE (DC-BOARD)
4	HHS (FLYBACK)
5	GC2M (DG-BOARD)
6	GC2S (DG-BOARD)
7	GC2V (DG-BOARD)
8	FAN

9 EEPROM copy jig

This PTV has a feature that allows to clone convergence from main EEPROM data adjustments from a PTV to other by connecting a jig to the PTV set, or can be used to back-up data before making adjustments. A jig part number TXFJIG01SER, is available through Matsushita/Panasonic Services.

Preparation:

To connect this jig, remove the lower back cover as instructed on disassembly for service section on this service manual and insert the jig into A10 connector located on A-Board. (See figure)

Procedure to copy data:

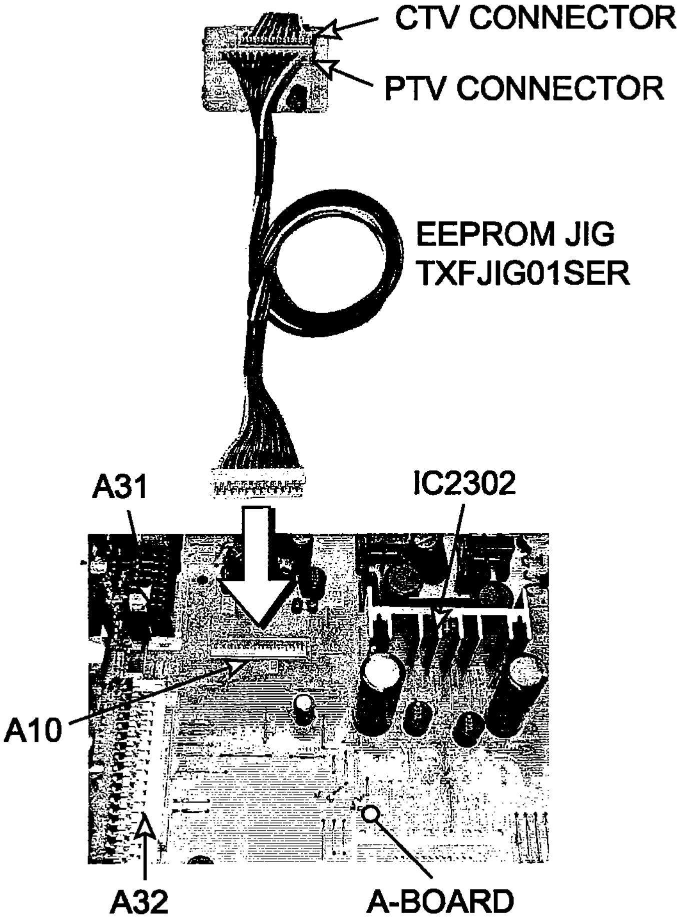
1. Enter to service mode and display service menu (see page 23).
2. Select "AREA" DAC and then press OK button on remote to enter. Press VOL right/left to select one of the following options then press OK:
   - Select ALL to copy all main EEPROM data
   - Select ADJ to copy only adjustment data.
   - Select FIX to copy only fix data
3. To copy data from main EEPROM to jig, select "IN→EX" DAC and press OK button on remote.
4. To copy data from jig to main EEPROM, select "EX→IN" DAC and press OK button on remote.

Procedure to copy convergence:

1. Enter to service mode and display service menu
2. Select "FINE" DAC and press OK on remote.
3. Press "8" on remote.
4. Select from and then press OK on remote:
   - INT to copy data from internal EEPROM to jig
   - EXT to copy from jig to internal EEPROM.
5. Select an option from the menu with CH keys and confirm with OK:
   - DEFAULT:default factory preset
   - CURRENT:to copy the current (receiver data or jig data) convergence adjustments to memory.
   - NOT USE: to back up data.
   - ALL: to copy all data.

   NOTE:

   The stated as default factory preset contain the factory DATA; Use this option when data was lost or when adjustment is lost completely.
6. Select destination to copy (INT or EXT) and confirm with OK.
7. Once an option is selected the copy process begins.
8. Once finished, the receiver shuts down for a moment to reinitialize.
9. Remove the copy jig from A10.



EEPROM copy jig connection

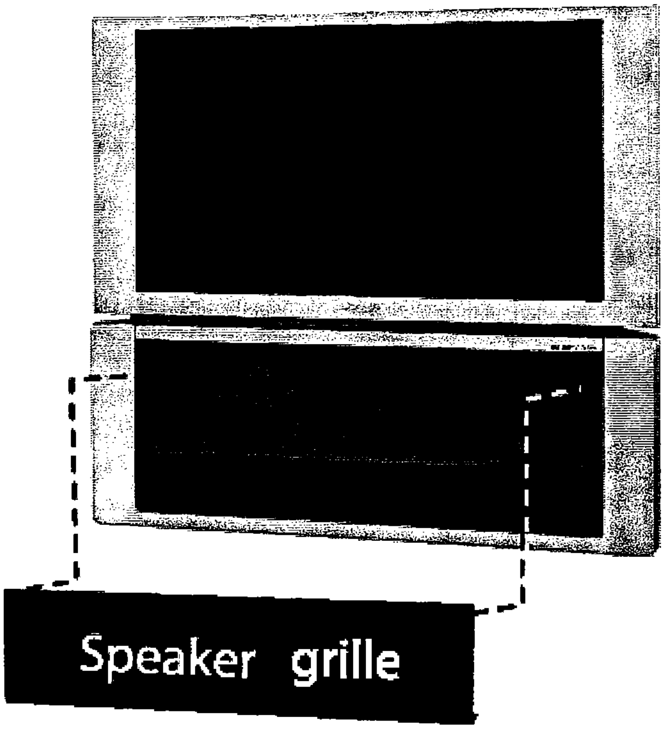
10 Disassembly for service

NOTE:

Board ground wires may have to be disconnected to disassemble some boards. All ground wires must be reconnected using jumper leads, if necessary, before power is applied to PTV for service.

Speaker grille removal

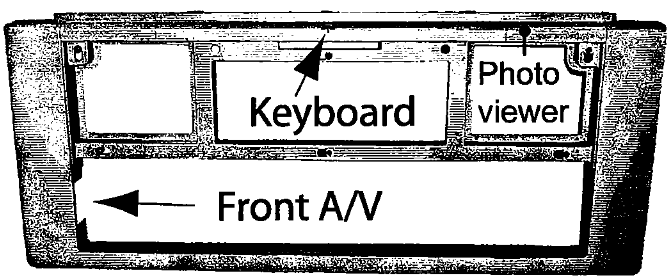
Speaker grille, is secured to the cabinet of the PTV with 6 rubber holders. Grip panel from the sides and middle upper part, and gently pull forward to remove. When reassembling, make certain to firmly press on the panel where the insertion points (6) are located, one at each corner and at the center (top & bottom).



Speaker grille removal

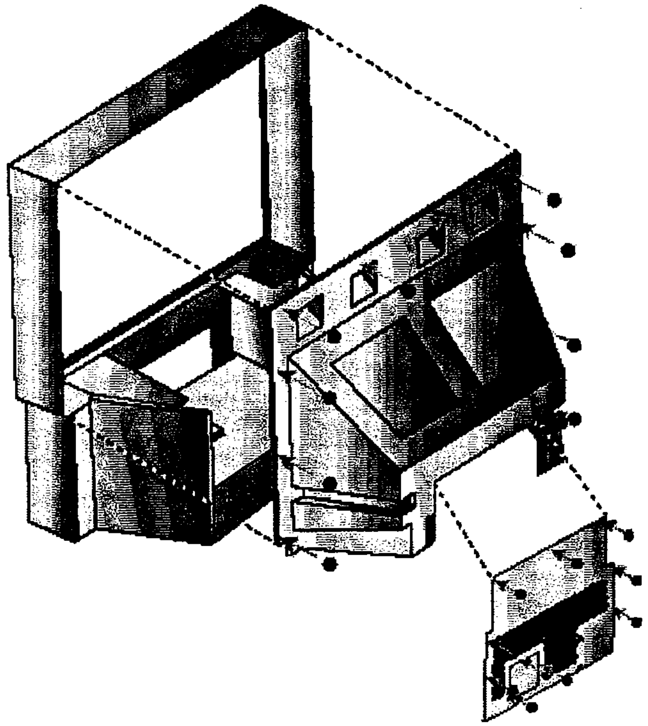
Keyboard, JPEG viewer and front A/V inputs removal

1. Remove the speaker grille.
2. Remove the screws around the woofers. Unplug the connectors from keyboard, front A/V inputs and JPEG viewer. Remove the screws (2) affixing the keyboard (top) and front A/V inputs (lower side) from the front panel frame and pull the assembly upward and release it from the front cabinet carefully.



Back lower cover removal

1. Remove (7) hex screws around the perimeter, marked with arrows. See figure for screws location.
2. Remove (9) screws from around the A/V terminal board (marked with arrows).



Back lower cabinet removal

Back cabinet removal

1. Remove the back lower cover. (Detailed previously).
2. The top back cover (plastic shell) is secured with (10) screws around its perimeter. See figure for screws location.
3. Be careful not to damage the mirror secured to the underside of the back cover.

Screen frame removal

1. Disconnect the cables leading to the keyboard, JPEG viewer and the A/V inputs.
2. At this point the front cover is held only by four screws, be careful not to push the cabinet forward.
3. Remove screws and tilt the assembly forward while lifting it out of place.

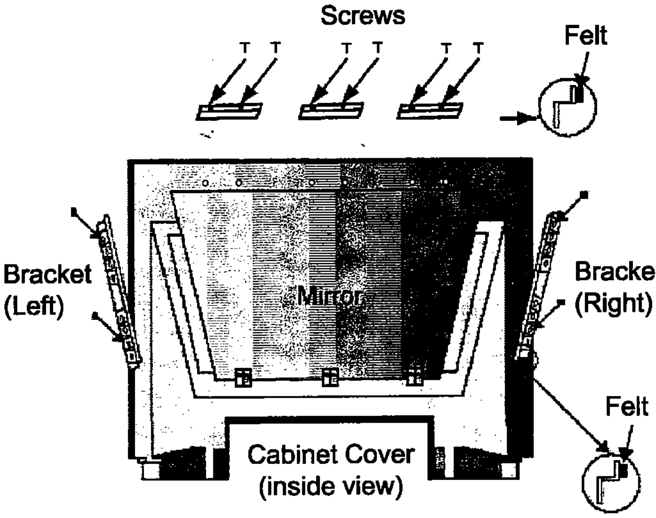
Speakers replacement

The speaker system of the P9 TW models consist in 3 speakers (tweeter, midrange and a woofer) for each channel (left & right). To replace follow this procedure:

1. Remove the speaker grille.
2. Each woofer is secured to the cabinet with 4 screws.
3. Remove the screen frame.
4. Each speaker is secured to the screen frame with 2 screws (tweeter) and 4 screws (midrange).
5. Disconnect the L and R speaker lead connectors from the speaker units.

Mirror removal

The mirror is attached inside the back cabinet cover. Carefully remove the cabinet cover to access its interior surface and remove the screws securing the brackets that hold the mirror at the top and sides to the mirror.


Screws
Felt
Bracket (Left)
Mirror
Bracket (Right)
Felt
Cabinet Cover (inside view)

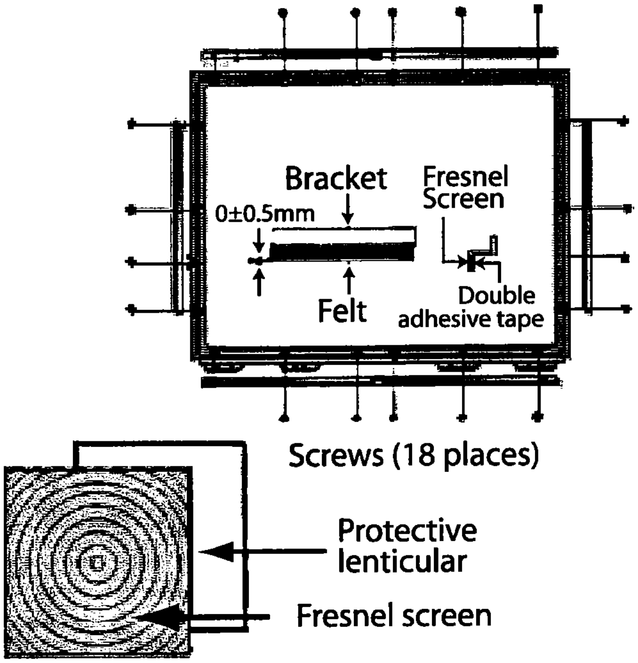
Mirror removal

Screen assembly

1. Remove the screen frame. See screen frame removal procedure.
2. Place screen frame face down on a soft surface.
3. Remove all screen brackets and corner brackets

   Note:

   The brackets are painted black (permanent marker) on the edge to prevent reflection on image.


Bracket
Fresnel Screen
0±0.5mm
Felt
Double adhesive tape
Screws (18 places)
Protective lenticular
Fresnel screen

Screen assembly

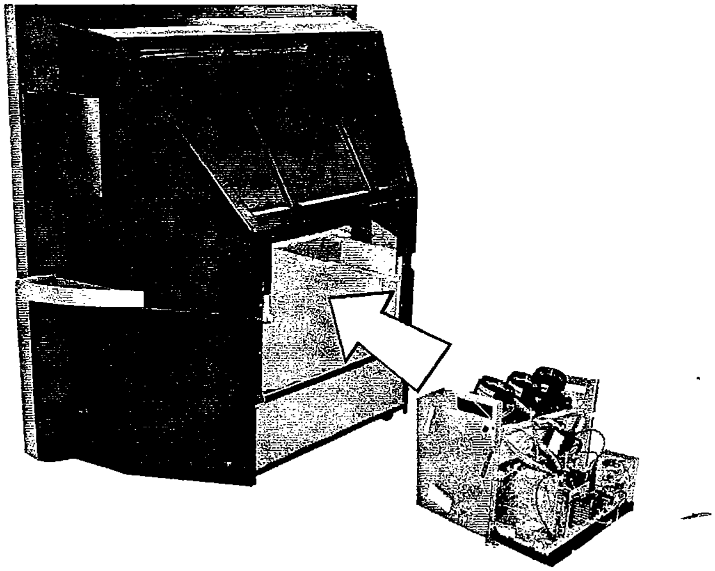
4. Remove the horizontal barrier panel at the back of the cabinet.
5. Unplug cables connectors (K1, JG3, G1 and speaker connectors) and pull out the main chassis block.

Note:

Main chassis block can be serviced either in normal position or laying on its back (protect hookup terminal from damage).

Main chassis block

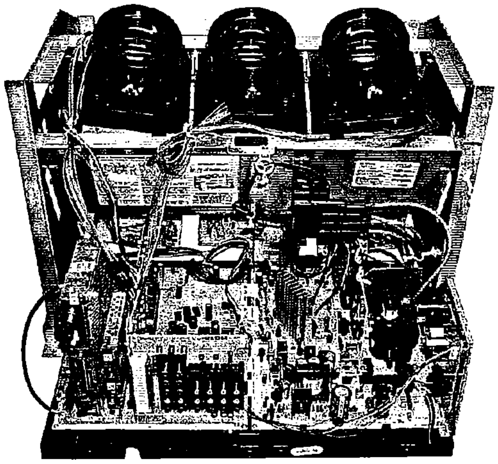
1. Remove the back lower cabinet cover.
2. The main chassis block is secured to the cabinet by 2 screws at front, behind the Speaker Grill and 3 screws inside on the bottom of the optical frame).
3. Remove the horizontal barrier panel at the back of the cabinet.
4. Unplug cables (K1, G1, JG3 and speaker connectors) and pull out the main chassis block.



Chassis removal

10.1. Chassis assembly

The chassis assembly shown in figure includes all the electrical and optical (light box) components



Chassis back view

A/V BACK COVER ASSEMBLY

This assembly is secured to H-Board by 8 screws. Be sure to disconnect the fan cable from H-board.

H-Board

1. H-Board is connected to DG-board with H1 connector.
2. Pull carefully to the right to disconnect.

DT-Board

1. This board has a metal frame holder that is fastened to A-Board with 2 screws. This metal frame must be removed first before trying pulling up DT-board, otherwise it can be damaged.
2. This board has grommet squares, be careful to do not screw too tight, otherwise the grommet screw hole will get stripped.
3. After removing the metal frame pull up carefully from A41 connector in A-Board.

   NOTE:

   This board is non-serviceable. Except for JK8002 and JK8003.
   When removing this board pull carefully.

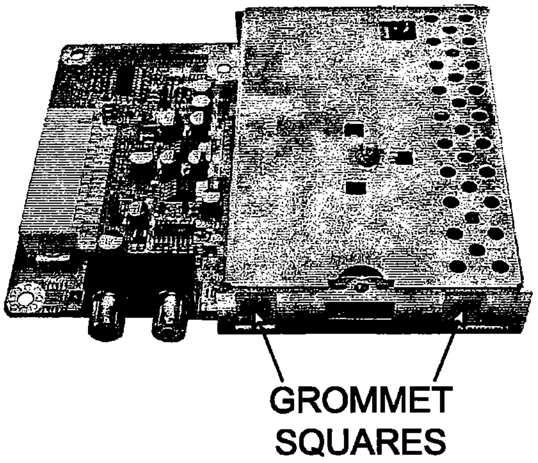
DV-Board

1. Plugs onto A-Board at the A51 connector.

   NOTE:

   This board is non-serviceable.
   When removing this board pull carefully.

2. This board has two Grommet squares, be careful to do not screw too tight, otherwise this grommet screw hole will get stripped.



NOTE:

This board is non-serviceable. Except for JK5002 (ANALOG AUDIO JACKS) and DV1 connector (JK5001)
When removing this board pull carefully.

DG-Board

1. Plugs onto A-Board at A31 and A32 connectors (DG1 and DG2 respectively).
2. Remove plug cables from connectors DG4, DG5, DG6 and DG7.

   NOTE:

   This board is non-serviceable.
   When removing this board pull carefully.

A-Board

1. A-Board is secured to the chassis tray with six screws.
2. The A-Board is mated to D-Board by four flexible connectors (male side of connectors): A1, A2, A3 & A4. To remove this board, unplug the connectors of A-Board pulling from the sides of each connector.

   NOTE:

   Some tie wraps that secure the wire dressings may need to be unfastened for chassis removal.

3. Remove plug connector in A30 that goes to T-Board (T2).
4. Remove plug connector in A15 that goes to LG-Board (LG1).

T-Board

1. T-Board is secured to a metal frame by 4 screws. This metal frame is fastened with 2 screws in D-Board and with 1 screw from the main chassis metal frame.
2. Disconnect T2 connector that goes to A-Board (A30).
3. Disconnect T1 plug connector that goes to D-Board (D10).

   NOTE:

   Some tie-wraps that secure the wire dressings may need to be unfastened for chassis removal.

D-Board

1. D-Board is secured to the chassis tray with five screws.
2. The D-Board is mated to the A-Board by four connectors (female side of connectors): D1, D2, D3 & D4. To remove this board, unplug the connectors on the A-Board pulling from the sides of each connector.

   NOTE:

   Some tie-wraps that secure the wire dressings may need to be unfastened for chassis removal.

DC-Board

1. Plugs onto the D-Board at the D21, D22 and D23 (DC1, DC2 and DC3 respectively) connectors.

   NOTE:

   This board is non-serviceable.
   When removing this board pull carefully.

JG-Board

1. This board is fastened by 4 screws to the front panel.

   NOTE:

   This board is non-serviceable except for the JG1 and JG2 connectors.
   Remove this board carefully.

R-Board

1. This board is secured to the upper front side of the light box by one screw, and plugged to R1 connector from DG5 on DG-Board.

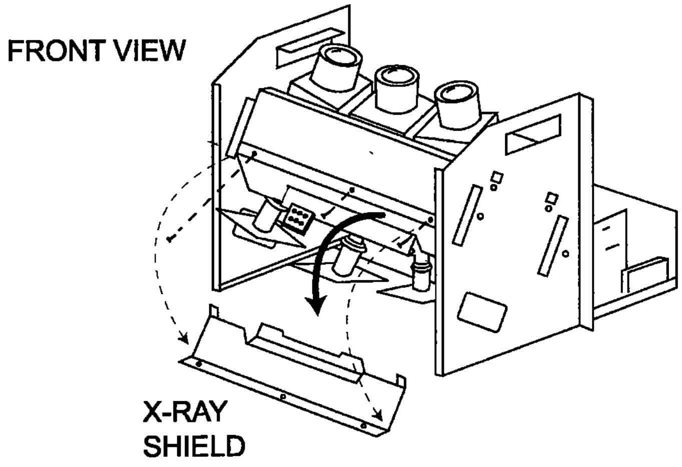
LR, LG and LB Board

1. Each board is plugged into the socket on the PRT neck, LR-Board on red PRT, LG-Board on green PRT and LB-Board on blue PRT.

10.2. Disassembly for CRT replacement

To facilitate CRT replacement, the complete CRT mounting chassis does not need to be removed.

1. Remove the main chassis block from the cabinet.
2. Remove the optical bracket metal cover (front side x-ray shield) by removing 3 screws on top.

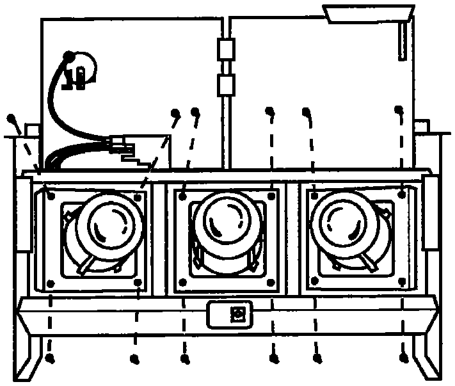


CRT replacement

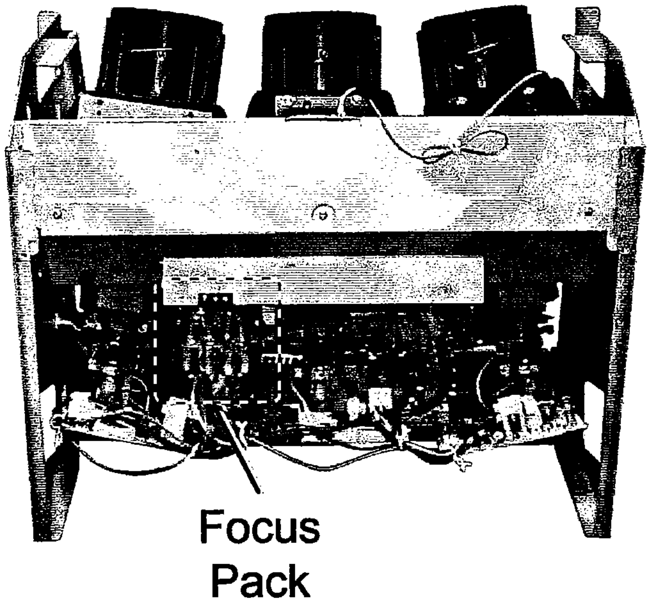
3. Remove the defective CRT anode lead from the high voltage distributor block that is mounted on the flyback transformer. Discharge to CRT chassis.
4. Unplug connectors from D-Board. See board layout. D14 for red, D15 for green and D16 for blue
5. Unplug the defective CRT black DAG ground connector from the CRT Board.
6. Remove the CRT Board from the defective CRT neck.
7. Remove (4) screws from the defective CRT housing.

   Caution:

   Do not remove the (4) CRT lens screws. Support the CRT assembly when loosening screws.



CRT replacement



Focus pack location

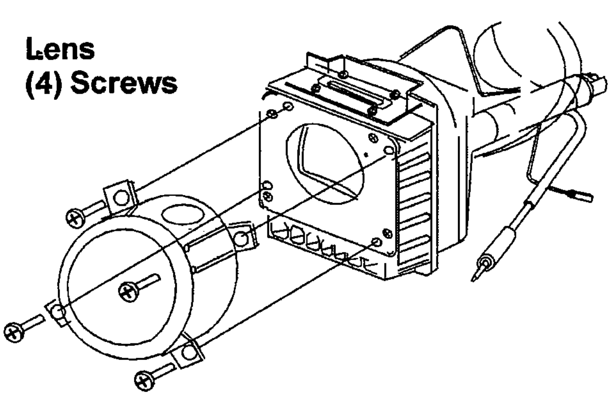
8. Release CRT anode lead from CRT chassis wire clamp and all other wires from holders.
9. Loosen a screw that secures the DY and remove it from the CRT neck.

   Caution:

   To insure protection against x-ray radiation, the lens must be mounted in place at all times when power is applied to the PTV

CRT replacement

1. Remove CRT focus lens assembly (4 screws)



CRT assembly

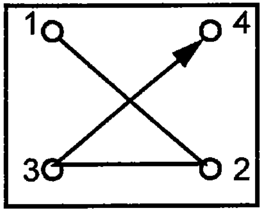
2. Lay CRT face down on a soft cloth.
3. Note position of yoke with centering tabs and remove from defective CRT.
4. Remove CRT DAG ground from defective CRT. Mount it on the replacement CRT exactly as it was on the defective CRT.

   Note:

   Replacement CRT is supplied with H.V. anode lead attached.
5. Wire the anode lead wire.
6. Install yoke with other CRT neck assemblies on CRT neck in the same order and position as removed from the defective CRT.
7. Press yoke against bell of CRT and tighten the clamp

just snug enough so it will not easily shift.

8. Assemble CRT focus lens assembly to new CRT with (4) screws. Make sure focus lens adjustment nut is in the same location as on other CRT focus lens

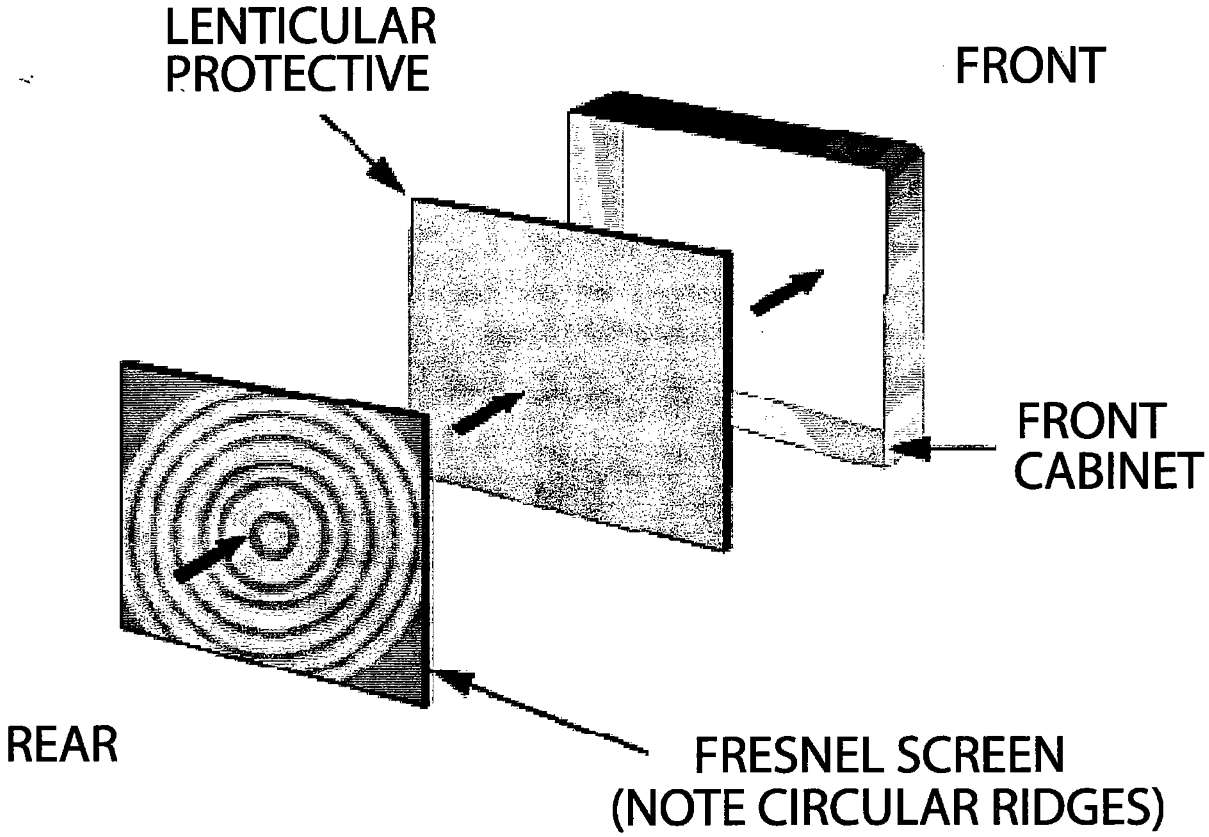


CRT screw tightening order

Note:

Please assemble with screws in the order shown and tighten with the same torque.

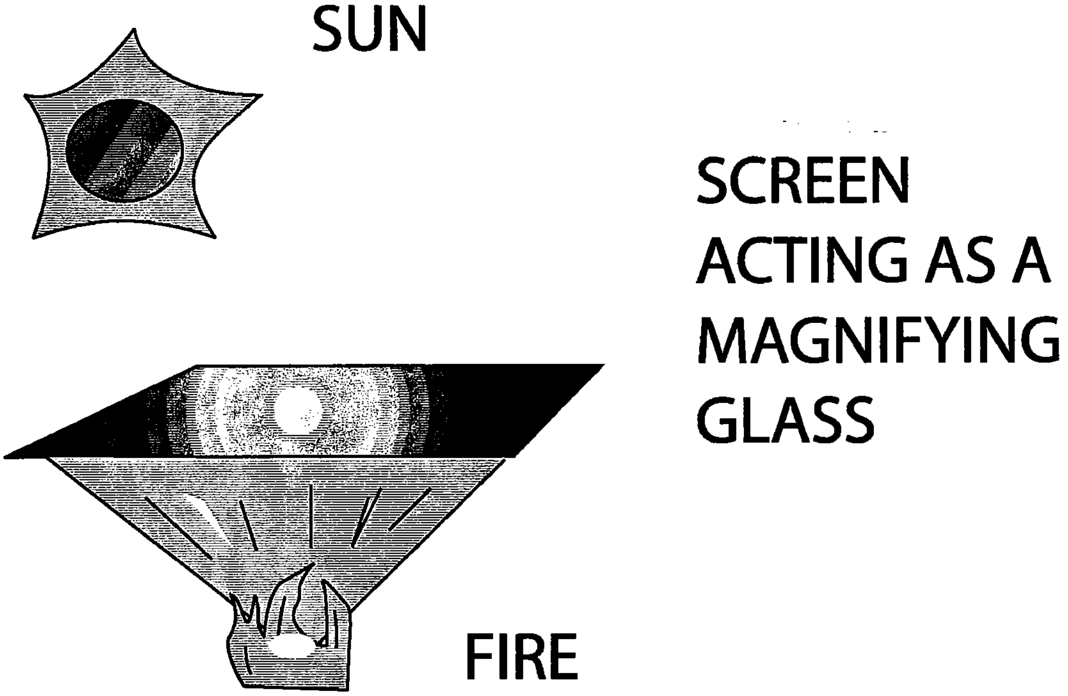
10.3. PTV screen assemblies


LENTICULAR PROTECTIVE
FRONT
FRONT CABINET
REAR
FRESNEL SCREEN (NOTE CIRCULAR RIDGES)

Screen assemblies

10.4. Screen assemblies warning

When storing or disposing of screen assemblies, be sure not to place them in direct sunlight. These screens may act as a magnifying glass and could cause a fire.


SUN
SCREEN ACTING AS A MAGNIFYING GLASS
FIRE

11 B+ voltages table

Preparation:

Set the following controls

- Picture to Normal
- Bright to Normal
- Volume to MIN (0)

Procedure:

1. Apply a NTSC COLOR BAR pattern
2. Connect the negative lead of the digital voltmeter to TPGND1 (cold ground).
3. Connect the positive lead of the digital voltmeter to each test point and confirm the B+ voltages.

No.	D-Board Test point	Voltage
1	C830 (+)	138.6±1.0
2	TPD13	19.0±1.5
3	TPD12	19.0±1.5
4	TPD11	-19.5±1.5
5	TPD10	22.0±1.5
6	C845 (-)	-22.5±1.5
No.	A-Board Test points	Voltage
1	TP118	5.0±0.5
2	TP114	2.5±0.5
3	TP070	5.0±0.5
4	L893	9.0±0.5
5	TP137	30.0±0.5

12 Service Mode (electronic controls)

This receiver has electronic technology using the IC bus concept. It performs as a control function and it replaces many mechanical controls. Instead of adjusting mechanical controls individually, many of the control functions are now performed by using "on screen display menu". (The service adjustment mode.)

NOTE:

It is suggested that the technician reads all the way through and understand the following procedure for entering/exiting the service adjustment mode; then proceed with the instructions working with the receiver. When becoming familiar with the procedure, the flow chart for service mode may be used as a quick guide.

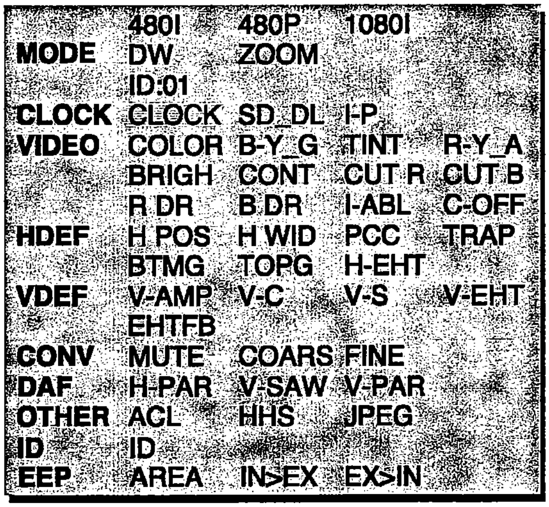
12.1. Quick entry to service mode:

When minor adjustments need to be done to the electronic controls, the method for entering the service mode without removal of the cabinet back is as follows, using the remote control:

1. Select SET-UP icon, enter "Program CH" and select CABLE mode in "Input Setup" option.
2. Select TIMER icon and set SLEEP time for 30 Min.
3. Press "OK" then VOL up to exit menus.
4. Tune to the Channel 124.
5. Adjust VOLUME to minimum (0).
6. Press VOL ← (decrease) on receiver. Red "CHK" appears in upper corner.

   To toggle between aging and service modes:

   While the "CHK" is displayed on the left top corner of the CRT, pressing "OK" and "VOL" UP on the TV simultaneously will toggle between the modes. Red "CHK" for service mode and yellow "CHK" for aging.
7. Press POWER on the remote control to display the service adjustment modes menu, select adjustment by pressing the VOL right/left buttons and CH up/down buttons on the remote and OK to enter the adjustment.



	480I	480P	1080I	
MODE	DW	ZOOM		
	ID:01			
CLOCK	CLOCK	SD_DL	I-P	
VIDEO	COLOR	B-Y_G	TINT	R-Y_A
	BRIGH	CONT	CUT R	CUT B
	R DR	B DR	I-ABL	C-OFF
HDEF	H POS	H WID	PCC	TRAP
	BTMG	TOPG	H-EHT	
VDEF	V-AMP	V-C	V-S	V-EHT
	EHTFB			
CONV	MUTE	COARS	FINE	
DAF	H-PAR	V-SAW	V-PAR	
OTHER	ACL	HHS	JPEG	
ID	ID			
EEP	AREA	IN>EX	EX>IN	

Service mode menu

12.2. Exiting the service mode:

This PTV goes out from service mode when it is unplugged or turned OFF. To exit the service mode, turn the TV OFF or unplug the PTV from AC.

Other method

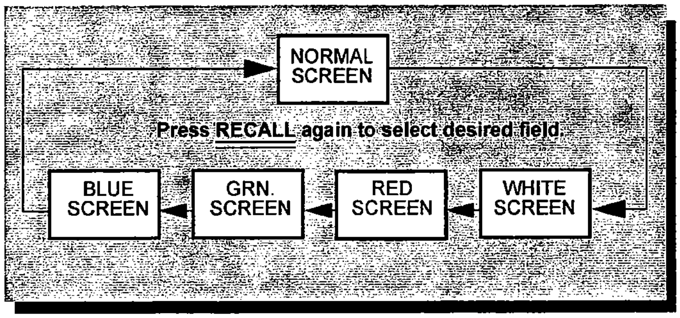
Press OK and POWER on the receiver simultaneously for at least 2 seconds.The receiver momentarily performs a self-check, tuned in channel 3 with a preset level of sound. To completely make an entire reset of the PTV unplug AC cord from AC outlet and plug it back in, then turn PTV power ON.Any programmed channels, channels caption data and some others user defined settings will be erased when performing this reset.

IMPORTANT NOTE

Always check that PTV exits the service mode

To check colors:

Press RECALL on the remote control when in service mode (red "CHK" is displayed) to enter the purity field check mode.



Color check

12.3. Service adjustment default values for items

DESCRIPTION	REGISTER	FORMAT				
		NTSC (480i)	480i ZOOM	480P	480P ZOOM	1080i
CLOCK ADJ	CLOCK	124	N/A	N/A	N/A	N/A
FIRMWARE DOWNLOAD	SD_DL	00	00	00	00	00
INTERLACED TO PROGRESSIVE	I-P	00	N/A	00	00	N/A
COLOR	COLOR	20	N/A	N/A	N/A	2A
MAGENTA TINT ADJ	B-Y_G	2B	N/A	N/A	N/A	34
TINT	TINT	85	N/A	N/A	N/A	80
YELLOW TINT ADJ	R-Y_A	96	N/A	N/A	N/A	83
SUB-BRIGHTNESS	BRIGH	09 F8	N/A	N/A	N/A	0A 34
SUB-CONTRAST	CONT	02 9F	N/A	N/A	N/A	02 91
RED CUT-OFF	CUT R	01 F5	N/A	N/A	N/A	01 F5
BLUE CUT-OFF	CUT B	02 23	N/A	N/A	N/A	02 23
RED DRIVE	R DR	64	N/A	N/A	N/A	N/A
BLUE DRIVE	B DR	42	N/A	N/A	N/A	N/A
INDIVIDUAL ABL CHECK	I-ABL	VARIABLE	N/A	VARIABLE	N/A	VARIABLE
CUT OFF ADJ	C_OFF	00	00	00	N/A	00
HORIZONTAL POSITIONING	H POS	01 83	01 83	01 83	N/A	01 83
HORIZONTAL WIDTH	H WID	51	51	51	N/A	51
PINCUSHION CORRECTION	PCC	40	40	40	N/A	40
TRAPEZOID	TRAP	81	81	81	N/A	81
BOTTOM CORNER PINCUSHION	BTMG	B0	B0	B0	N/A	B0
TOP CORNER PINCUSHION	TOPG	B4	B4	B4	N/A	B4
HORIZONTAL EHT PRESET	H-EHT	N/A	N/A	N/A	N/A	31
VERTICAL SIZE	V-AMP	00 94	00 94	00 94	N/A	00 94
VERTICAL LINEARITY	V-C	87	87	87	N/A	87
VERTICAL S CORRECTION	V-S	59	59	59	N/A	59
VERTICAL EHT PRESET	V-EHT	N/A	N/A	N/A	N/A	1B
FLYBACK EHT PRESET	EHTFB	FF	FF	FF	N/A	FF
MUTE CONVERGENCE	MUTE	00	00	00	N/A	00
COARSE ADJ	COARS	00	00	00	N/A	00
FINE ADJ	FINE	00	00	00	N/A	00
H DAF ADJUSTMENT	H-PAR	0	0	0	N/A	0
V SAW DAF ADJUSTMENT	V-SAW	0	0	0	N/A	0
V DAF ADJUSTMENT	V-PAR	0	0	0	N/A	0
ACL ADJUSTMENT	ACL	00	00	0	N/A	00
JPEG SERVICE MENU	JPEG	00	00	0	N/A	00
ID*	ID	01	01	01	01	01
AREA	AREA	FIX	FIX	FIX	N/A	FIX

***IMPORTANT:**

The default ID register value should not be modified in any way, it has been already set to a factory default value specifically for the models listed in this manual.

NOTE:

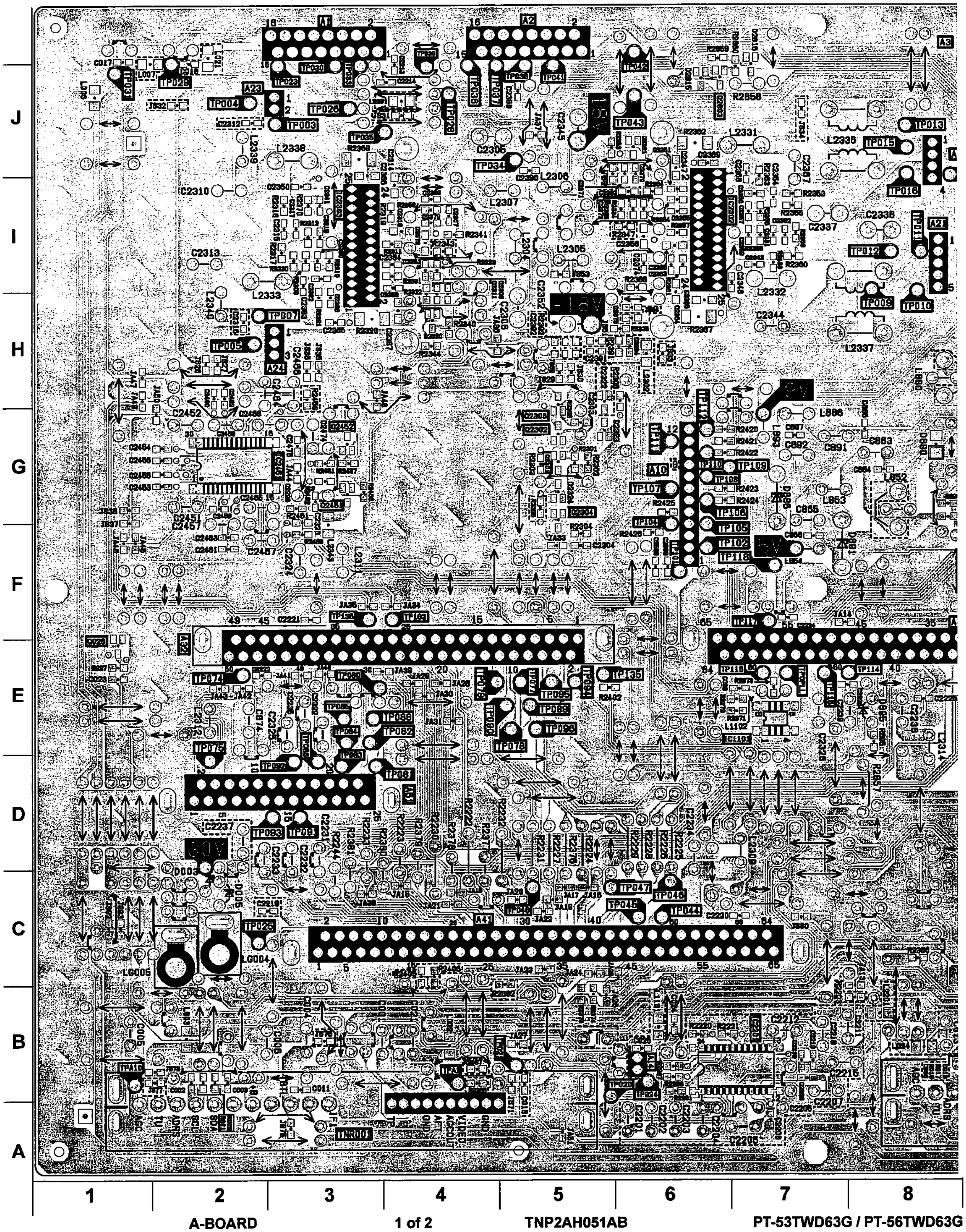
The above table shows the default values for the service items, this values can change depending on the serviced PTV.

13 Reference of PDF links color

DESCRIPTION OF PDF LINK COLORS	
TYPE	**DESTINATION**
SCHEMATIC	
YELLOW ON IC	IC ON PCB
YELLOW ON CONNECTOR	CONNECTOR ON PCB
YELLOW ON SCHEMATIC	PCB
CYAN	WAVEFORM
GREEN ON SIDE	SCHEMATIC CONTINUED
GREEN ON CONNECTOR	CONNECTOR CONNECTION
BLUE ON IC	VOLTAGE
PCB	
BLUE ON IC	IC ON SCHEMATIC
BLUE ON CONNECTOR	CONNECTOR ON SCHEMATIC
BLUE ON PCB	SCHEMATIC
GREEN ON SIDE	PCB CONTINUED
BLOCK DIAGRAMS	
GREEN ON IC	IC ON SCHEMATIC
GREEN ON SIDE	BLOCK DIAGRAM CONTINUED

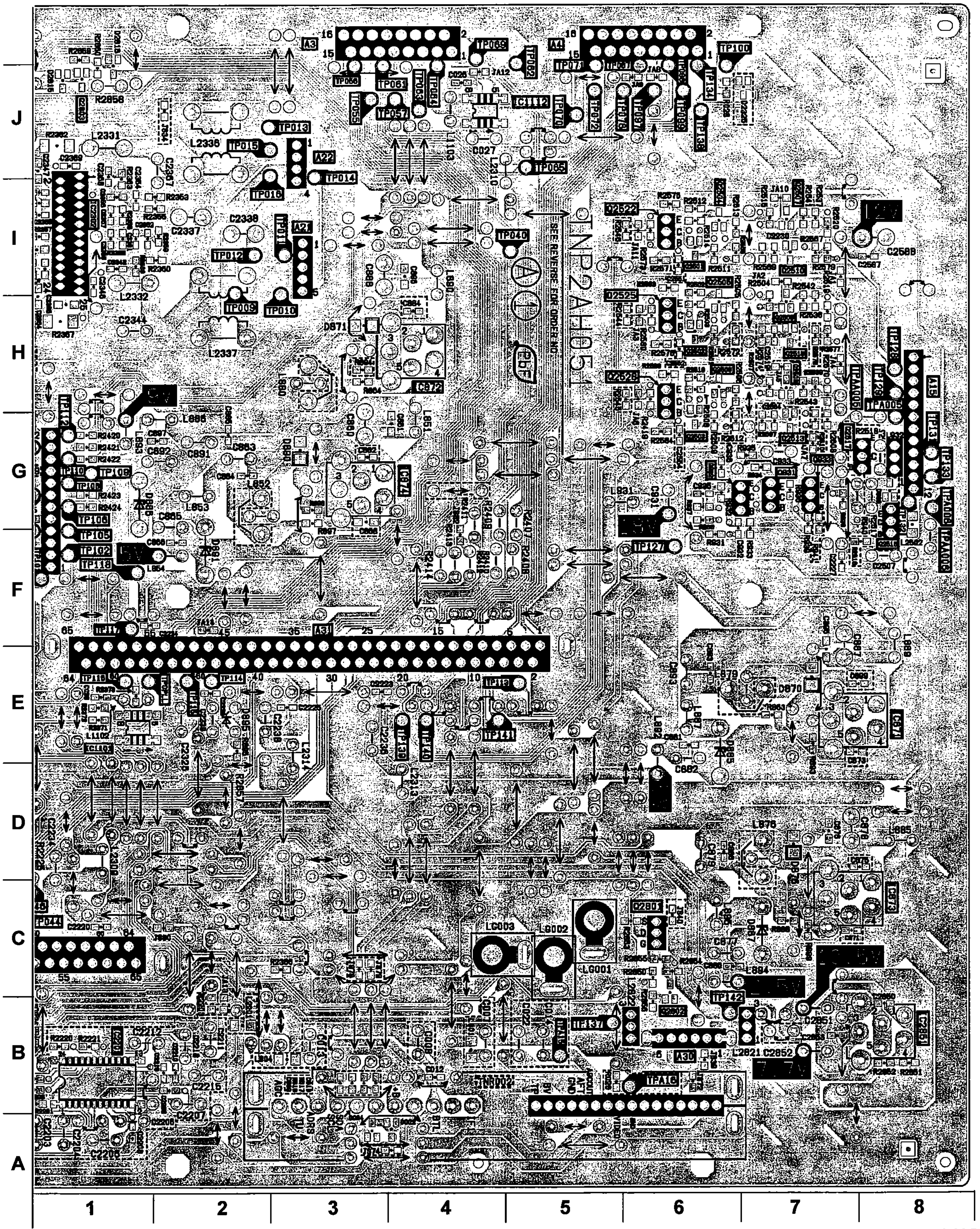
14 Conductor views

14.1. A-Board Printed Circuit (page 1 of 2)



J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
A-BOARD
1 of 2
TNP2AH051AB
PT-53TWD63G / PT-56TWD63G
A1
A2
A3
A10
A23
A24
A32
A41
TP004
TP003
TP007
TP005
TP013
TP015
TP012
TP009
TP010
TP025
TP034
TP043
TP074
TP076
TP078
TP102
TP105
TP106
TP107
TP109
TP118
TNR001
L2331
L2332
L2336
L2337
L2305
L2306
L2307
L2333
L2338
L2339
L2340
C2310
C2313
C2305
C2337
C2338
C2344
C2345
C2452
C2451
C2457
C2237
C891
C892
C863
C855
L886
L852
L853
LG004
LG005
R2856
15V
-15V
5V
9V
30V

14.2. A-Board Printed Circuit (page 2 of 2)


J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
TNP2AH051
SEE REVERSE FOR ORDER NO.
A3
A4
A21
A22
A31
A30
A15
TP013
TP014
TP015
TP016
TP012
TP011
TP009
TP010
TP040
TP065
TP100
TP127
TP141
TP142
TP137
L2331
L2336
L2332
L2337
C2338
C2337
C2344
R2858
D871
L852
L853
L854
L861
L831
L879
L884
L875
L885
D870
LC003
LC002
LC001
Q2801
Q2522
Q2525
Q2528
C2589
C2567
C2852
C2851
L2821
C2212
C2215
C2207
C2205
C2220

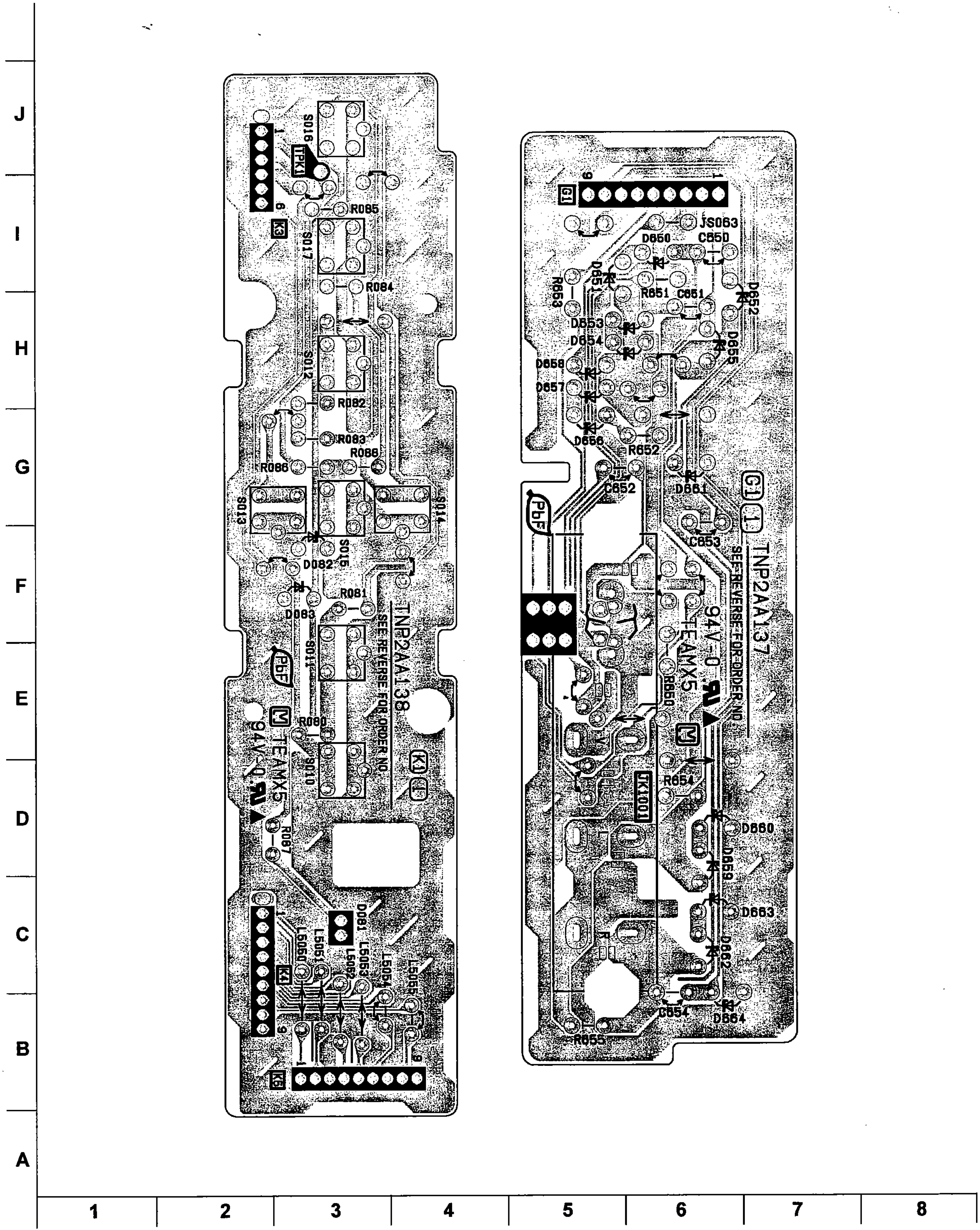
A-BOARD

2 of 2

TNP2AH051AB

PT-53TWD63G / PT-56TWD63G

14.3. G & K Printed Circuit Boards


J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
S016
TPK1
K3
R085
S017
R084
S012
R082
R083
R086
R086
S013
S014
S015
D082
R081
D083
S011
TNP2AA138
SEE REVERSE FOR ORDER NO.
PbF
TEAMX5
94V-0
R080
S010
K1
R087
D081
L5050
L5051
L5052
L5053
L5054
L5055
K4
K5
G1
JS063
D650
C650
D651
R653
R651
C651
D652
D653
D654
D655
D658
D657
D656
R652
C652
D661
G1
TNP2AA137
SEE REVERSE FOR ORDER NO.
C653
94V-0
TEAMX5
R650
R654
JK1001
D660
D659
D663
D662
C654
D664
R655
PbF

G-PCB / K-PCB

TNP2AA137 / TNP2AA138

PT-53TWD63G / PT-56TWD63G

15 Schematic diagrams

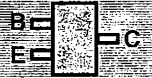
15.1. Schematic diagrams notes

Notes:

IMPORTANT SAFETY NOTICE

THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES THAT ARE IMPORTANT FOR PROTECTION FROM X-RADIATION, FIRE AND ELECTRICAL SHOCK HAZARDS. WHEN SERVICING IT IS ESSENTIAL THAT ONLY MANUFACTURERS SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS DESIGNATED WITH A ⚠ IN THE SCHEMATIC.

CHIP TRANSISTOR LEAD DESIGNATION



SCHEMATIC NOTES

1. Resistors are carbon 1/4W unless noted otherwise.
2. Capacitors are ceramic 50V unless noted otherwise.
3. Coil value notes is inductance in µH.
4. Test point indicated by ⫯ ; Test point but no pin ʃ.
5. Components indicated with ⚠ are critical parts and replacement should be made with manufacture specified replacement parts only.
6. ▬ **(BOLD LINE)** indicates the route of B+ supply.
7. The schematic diagrams are current at the time of printing and are subject to change without notice.
8. Ground symbol ⏚ indicates **HOT GROUND CONNECTION**; ⊥ indicates COLD GROUND.

NOTE: All other component symbols are used for engineering design purposes.

VOLTAGE MEASUREMENTS

1. Voltage measurement:
   - AC input to the Receiver is 120V. NTSC (HD, 1125i & 525P when applicable) signal generator is connected to the antenna of the Receiver. (Color bar pattern of 100 IRE white and 7.5 IRE black.)
   - All Picture and Audio adjustments are set to Normalize.
     TV ANT/CABLE - (Set-Up Menu) in TV/ANT Mode
     Volume - Min.
     TV/Video SW - TV position
     Audio Mode - Stereo
   - Voltage readings are nominal and may vary ±10% on active devices.
     Some voltage reading will vary with signal strength and picture content.
     Supply voltages are nominal.
2. Ground symbol ⏚ indicates ground lead connection of meter.
   Incorrect ground connection will result in erroneous readings.

CAUTION: Incorrect ground connection of the test equipment will result in erroneous readings.

WAVEFORM MEASUREMENTS

1. ③ indicates waveform measurement. (Measurement can be taken at the best accessible location in common to the indicated point.)
2. Taken with an NTSC signal generator connected to the antenna terminal. (NTSC color bar pattern of 8 bars of EIA colors, 100 IRE white and 7.5 IRE black.)
3. Customer Controls (Picture/Audio Menu) are set to Normalize. Volume is set to "MIN".
4. All video and color waveforms are taken with a wideband scope and a probe with low capacitance (10 to 1). Shape and peak altitudes may vary depending on the type of Oscilloscope used and its settings.
5. Ground symbol ⏚ shown on waveform number indicates (Hot) ground lead connection of the Oscilloscope.

CAUTION: Incorrect ground connection of the test equipment will result in erroneous readings.

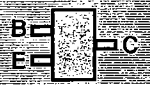
15.2. Notas de los diagramas esquemáticos

Notas

NOTA DE SEGURIDAD

LOS DIAGRAMAS ELÉCTRICOS INCLUYEN CARACTERÍSTICAS ESPECIALES MUY IMPORTANTES PARA LA PROTECCIÓN CONTRA RAYOS-X, QUEMADURAS Y DESCARGAS ELÉCTRICAS. CUANDO SE DE SERVICIO ES IMPORTANTE USAR PARA REEMPLAZO DE COMPONENTES CRITICOS, SOLO PARTES ESPECIFICADAS POR EL FABRICANTES. LOS COMPONENTES CRITICOS ESTAN SEÑALADOS EN LOS DIAGRAMAS POR EL SIMBOLO ⚠.

IDENTIFICACIÓN DE TERMINALES PARA TRANSISTORES EN *CHIP*



NOTAS DE LOS DIAGRAMAS

1. Las Resistencias son de Carbón de 1/4W, a menos que se indique otra característica.
2. Los Capacitores son de Cerámica para 50V, a menos que se indique otra característica.
3. El valor indicado de las Bobinas es la inductancia expresada en µH.
4. Los puntos de prueba en la terminal de algún componente son indicados por ● Los puntos de prueba fuera de los componentes se indican con ○.
5. Los componentes señalados con el símbolo ⚠ son considerados componentes críticos y deben ser reemplazados sólo con las partes especificadas por el fabricante.
6. ▬ **(LINEA GRUESA)** indica las líneas de alimentación de los Voltajes B+.
7. Los diagramas eléctricos están sujetos a cambio sin previo aviso.
8. El símbolo ⏚ indica que es una conexión a **Tierra Caliente** y el símbolo ⫽ indica conexión a **Tierra Fría**.

NOTA: Los demas símbolos de componentes incluidos son usados con fines de diseño.

MEDICIÓN DE VOLTAJES

1. Medición de voltaje:
   - El voltaje de entrada al Receptor es de 120V de Corriente Alterna. Un generador de patrones con formato NTSC se conecta a la entrada de la antena. (Patrón de Barras de Colores con 100 IREs para el Blanco y 7.5 IREs para el Negro.)
   - Los ajustes de los Menus Picture y Audio se normalizan.
   - En el Menú Set-Up, en la opción ANTENA, se selecciona el modo de CABLE.
   - El nivel de Volumen se minimiza.
   - De los modos TV y Video, seleccionar el modo TV.
   - Seleccionar modo Estereo del Audio.
   - Las mediciones de los voltajes son nominales y pueden variar hasta 10% en componentes en funcionamiento. Las lecturas de los voltajes pueden variar por la potencia de la señal y el contenido de la imagen.
   - Las fuentes de voltajes son nominales.
2. El símbolo ⏚ indica el tipo de tierra que se utiliza en la conexión del medidor.

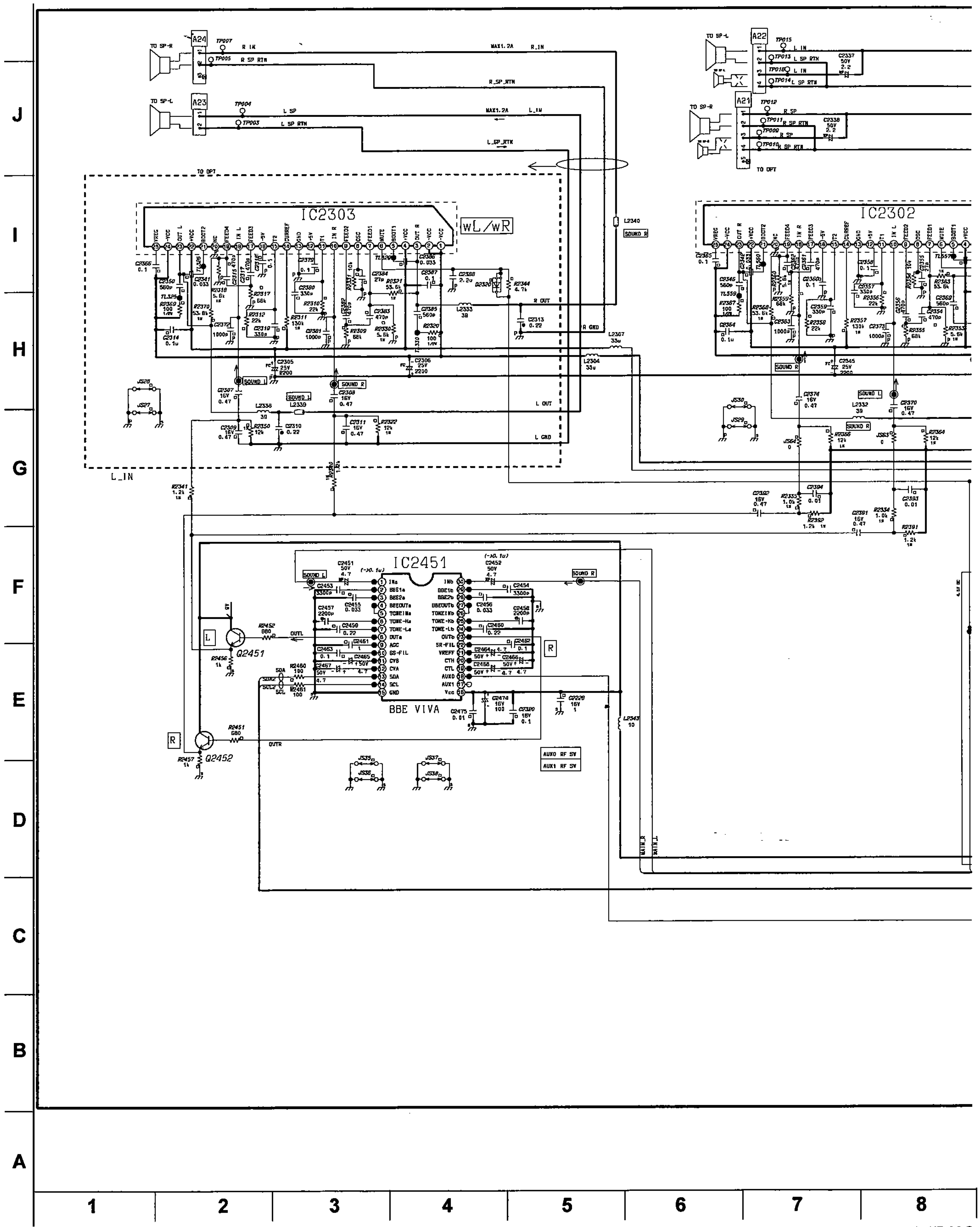
PRECAUCION: Si no se utiliza la conexión a la tierra adecuada, se obtendrán mediciones equivocadas y podría dañar el equipo de medición.

MEDICIÓN DE FORMAS DE ONDA

1. Un símbolo como ③ indica el punto para medir una señal. (La medición puede hacerse en el punto con mayor accesibilidad, siempre que sea común al indicado.)
2. Se midieron utilizando un generador con formato NTSC conectado a la terminal de la antena. (Patrón de 8 Barras de Colores EAI, formato NTSC de 100 IREs para el Blanco y 7.5 IREs para el Negro.)
3. Los ajustes de usuario de los Menus PICTURE y AUDIO se normalizaron. Posteriormente el nivel de volumen se ajusta al mínimo.
4. Las formas de onda de Video y Color fueron tomadas con un osciloscopio de banda alta y con un punta de prueba de baja capacitancia (10 a 1). La forma y amplitud de las ondas puede variar según el tipo de osciloscopio que se utilice y sus características.
5. El símbolo de tierra ⏚ que aparece junto al número de la forma de onda, indica que se utiliza conexión a **Tierra Caliente** en el extremo negativo de la punta de prueba.

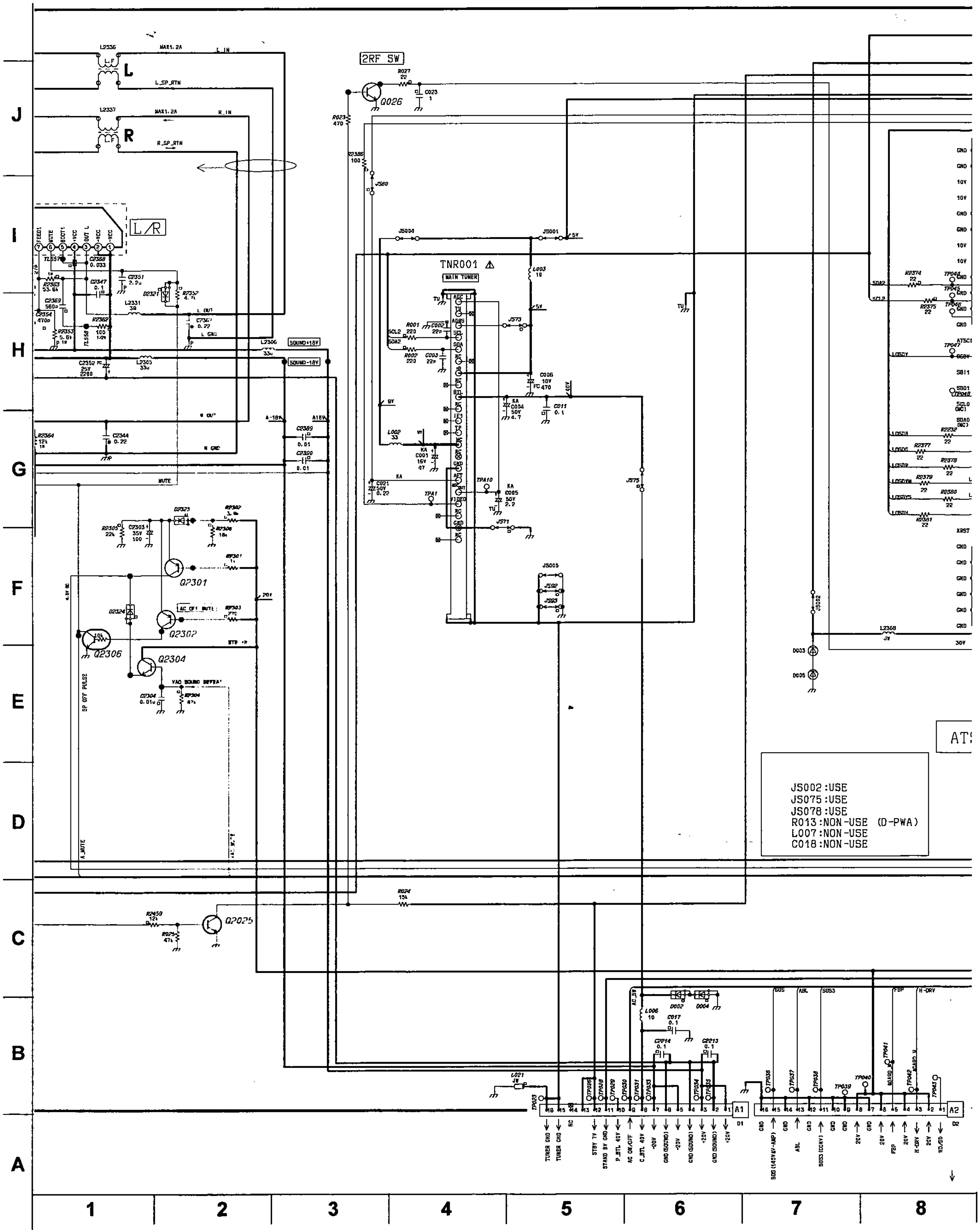
PRECAUCION: Si no se utiliza la conexión a la tierra adecuada, se obtendrán mediciones equivocadas y podría dañar el equipo de medición.

15.3. A-Board schematic TNP2AH051AB (page 1 of 4)

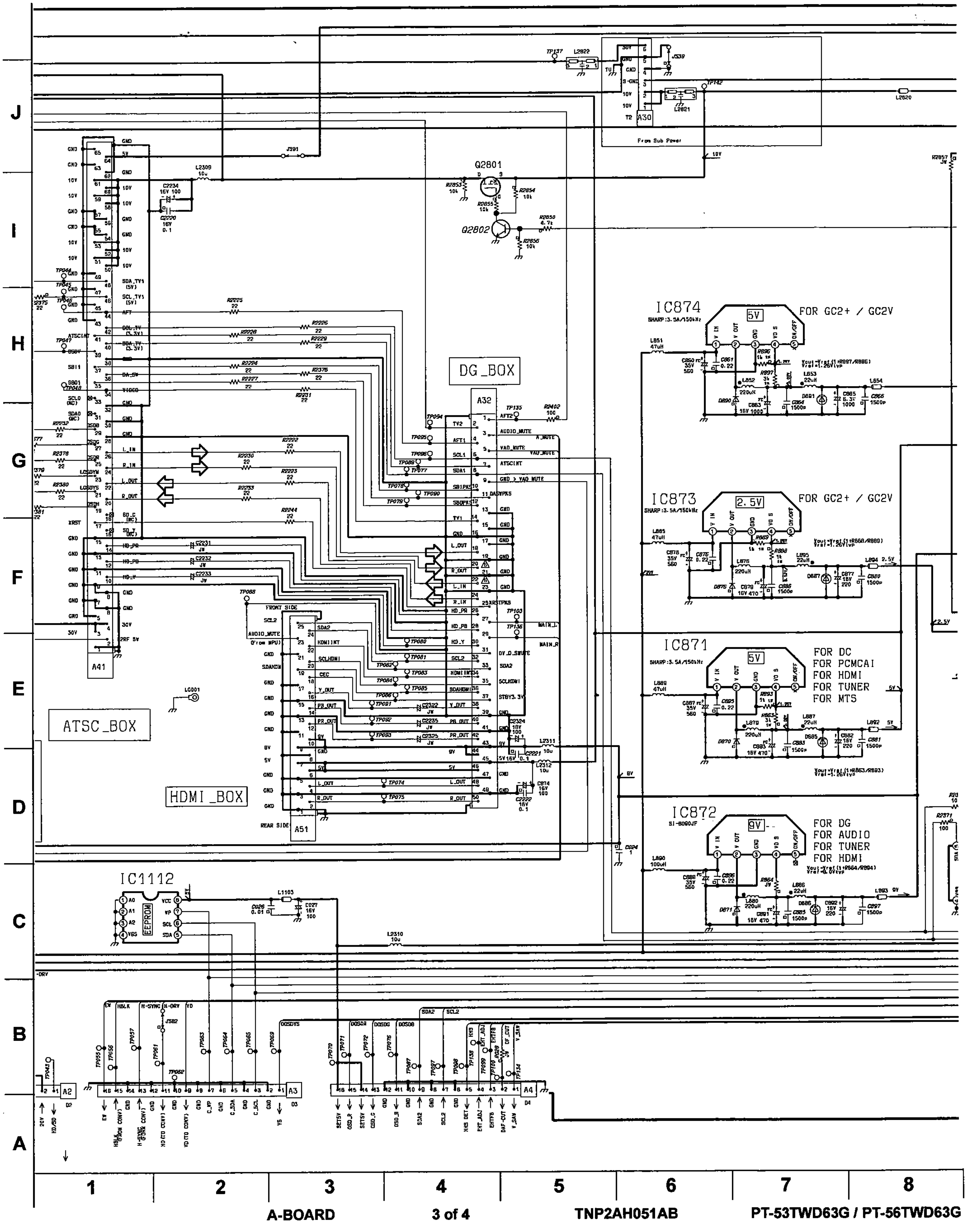


TO SP-R
A24
TP007
R IN
TP005
R SP RTN
MAX1.2A
R_IN
R_SP_RTN
TO SP-L
A23
TP004
L SP
TP003
L SP RTN
MAX1.2A
L_IN
L_SP_RTN
TO OPT
TO SP-L
A22
TP015
L IN
TP013
L SP RTN
TP016
TP014
C2337
50V
2.2
TO SP-R
A21
TP012
R SP
TP011
R SP RTN
TP009
TP010
C2338
50V
2.2
TO OPT
IC2303
wL/wR
IC2302
L2340
SOUND R
R OUT
R GND
L OUT
L GND
C2313
0.22
L2333
39
L2307
33u
L2304
33u
SOUND L
SOUND R
C2305
25V
2200
C2306
25V
2200
C2307
16V
0.47
C2308
16V
0.47
L2336
39
L2339
C2309
16V
0.47
R2350
12k
C2310
0.22
C2311
16V
0.47
R2322
12k
L_IN
R2341
1.2k
C2345
25V
2200
C2374
16V
0.47
L2332
39
C2370
16V
0.47
R2386
12k
R2364
12k
C2392
16V
0.47
R2335
1.0k
C2394
0.01
R2392
1.2k
C2391
16V
0.47
R2334
1.0k
C2393
0.01
R2391
1.2k
IC2451
C2451
50V
4.7
C2452
50V
4.7
SOUND L
SOUND R
C2453
3300p
C2454
3300p
C2457
2200p
C2455
0.033
C2456
0.033
C2458
2200p
C2459
0.22
C2460
0.22
C2461
1
C2462
0.1
C2463
0.1
C2464
50V
4.7
C2465
50V
4.7
C2466
50V
C2467
50V
4.7
C2468
50V
4.7
1Na
BBE1a
BBE2a
BBEOUTa
TONE1Ma
TONE-Ha
TONE-La
OUTa
AGC
SS-FIL
CYB
CYA
SDA
SCL
GND
1Nb
BBE1b
BBE2b
BBEOUTb
TONE1Mb
TONE-Hb
TONE-Lb
OUTb
SR-FIL
VREFF
CTH
CTL
AUX0
AUX1
Vcc
BBE VIVA
C2474
16V
100
C2475
0.01
C2320
16V
0.1
C2228
16V
1
L2343
10
L
Q2451
R2452
680
OUTL
R2456
1k
R
Q2452
R2451
680
OUTR
R2457
1k
R2460
100
R2461
100
SDA
SCL
AUX0 RF SW
AUX1 RF SW
MAIN_R
MAIN_L
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8

15.4. A-Board schematic TNP2AH051AB (page 2 of 4)

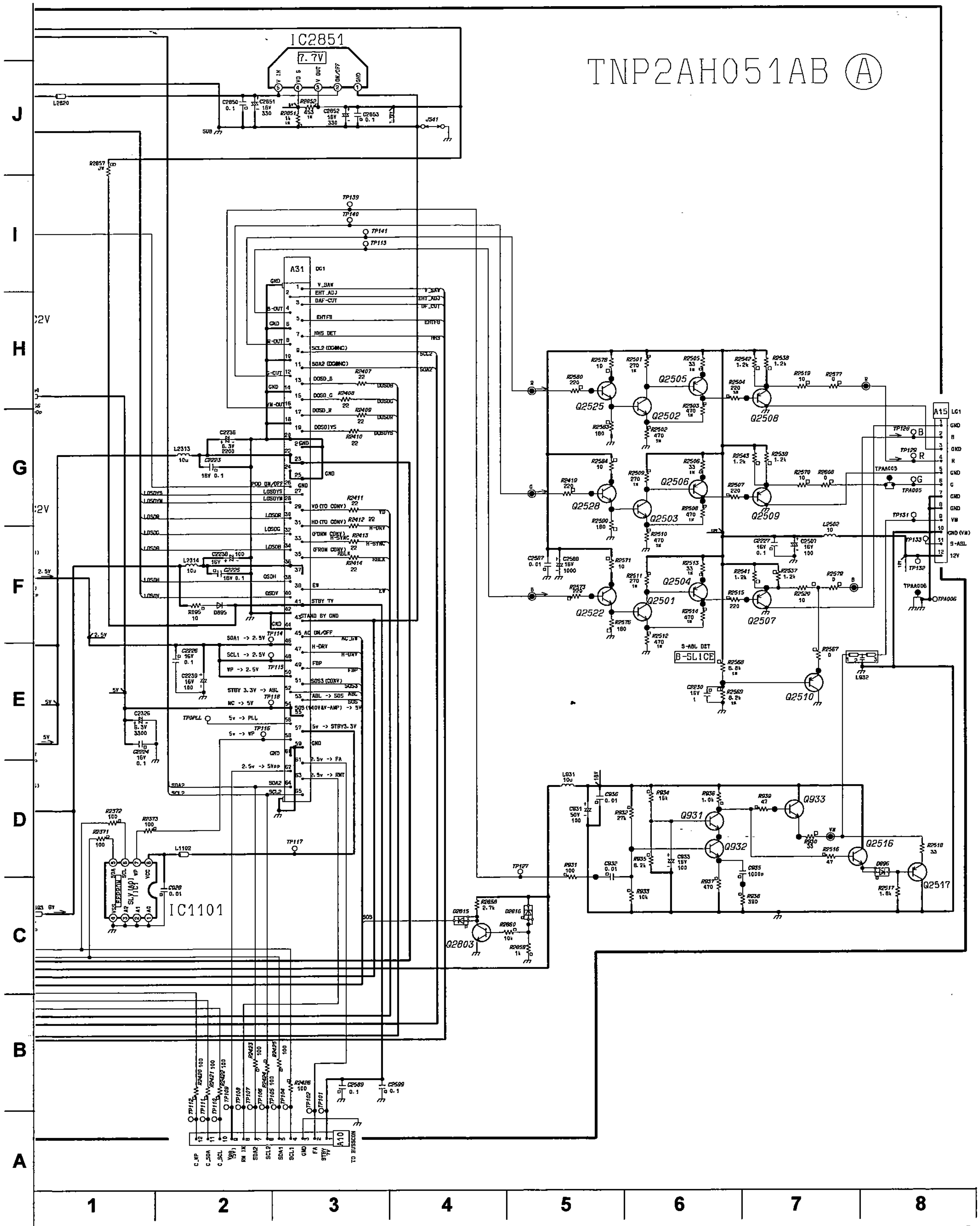

J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
L2336
L2337
L
R
L_IN
L_SP_RTN
R_IN
R_SP_RTN
L/R
2RF SW
R027
22
C023
1
Q026
R023
470
R2385
100
JS80
JS004
JS001
5V
TNR001 ⚠
MAIN TUNER
L003
10
JS73
R001
220
C002
22p
SCL2
SDA2
R002
220
C003
22p
C006
10V
470
C034
50V
4.7
C011
0.1
L002
33
C001
16V
47
C021
50V
0.22
TPA10
TPA1
C005
50V
2.2
JS75
JS71
JS005
JS92
JS93
JS002
L2306
33u
L2305
33u
SOUND+18V
SOUND-18V
A-18V
A18V
C2389
0.01
C2390
0.01
C2352
25V
2200
C2344
0.22
R2354
12k
MUTE
D2323
R2302
R2305
22k
C2303
35V
100
R2306
18k
R2301
Q2301
D2324
R2303
Q2302
AC OFF MUTE
20V
Q2306
Q2304
STB +B
VAC SOUND DEFEAT
C2304
0.01u
R2304
47k
SP OFF PULSE
A_MUTE
R024
15k
R2459
12k
R025
47k
Q2025
L006
10
C017
0.1
D002
D004
C2214
0.1
C2213
0.1
L021
JW
A1
A2
D1
D2
TUNER GND
TUNER GND
NC
STBY 7V
STAND BY GND
P_BTL 40V
AC ON/OFF
C_BTL 40V
-20V
GND (SOUND)
+20V
GND (SOUND)
GND (SOUND)
+20V
GND
SOS (14OVAV-AMP)
GND
ABL
GND
SOS3 (CONV)
GND
GND
20V
GND
20V
FBP
20V
H-DRV
20V
HD/SD
L2308
JW
D003
D005
30V
SDA2
SCL2
R2374
22
R2375
22
TP044
TP045
TP046
TP047
GND
10V
ATSC
R2377
22
R2378
22
R2379
22
R2380
22
R2381
22
XRST
ATS
JS002 :USE
JS075 :USE
JS078 :USE
R013 :NON-USE (D-PWA)
L007 :NON-USE
C018 :NON-USE

15.5. A-Board schematic TNP2AH051AB (page 3 of 4)



J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
From Sub Power
A30
L2822
L2821
L2820
J539
TP137
TP142
Q2801
Q2802
R2853 10k
R2854 10k
R2855 10k
R2850 4.7k
R2856 10k
J391
L2309 10u
C2234 16V 100
C2220 16V 0.1
A41
ATSC_BOX
HDMI_BOX
DG_BOX
A32
A51
LG001
IC874
SHARP:3.5A/150kHz
FOR GC2+ / GC2V
5V
IC873
2.5V
FOR GC2+ / GC2V
IC871
5V
FOR DC
FOR PCMCAI
FOR HDMI
FOR TUNER
FOR MTS
IC872
SI-8090JF
9V
FOR DG
FOR AUDIO
FOR TUNER
FOR HDMI
V IN
V OUT
GND
VO S
ON/OFF
IC1112
EEPROM
A0
A1
A2
VSS
VCC
WP
SCL
SDA
L1103
L2310 10u
C026 0.01
C027 16V 100
L2311 10u
L2312 10u
A2
A3
A4
D2
D3
D4
20V
HD/SD
EW
HBLK
H-SYNC
HD(TO CONV)
VD(TO CONV)
C_WP
C_SDA
C_SCL
YS
SETSV
OSD_R
OSD_G
OSD_B
SDA2
SCL2
HHS DET
EHT_ADJ
EHTFB
DAF-CUT
V_SAW
OOSDYS
-DRV

15.6. A-Board schematic TNP2AH051AB (page 4 of 4)



TNP2AH051AB Ⓐ
IC2851
7.7V
V IN
VO S
V OUT
ON/OFF
GND
J541
A31
A15
A10
TO BUSSCON
IC1101
Q2525
Q2505
Q2502
Q2508
Q2528
Q2506
Q2503
Q2509
Q2522
Q2504
Q2501
Q2507
Q2510
B-SLICE
S-ABL DET
Q931
Q932
Q933
Q2516
Q2517
Q2803
J
I
H
G
F
E
D
C
B
A
1
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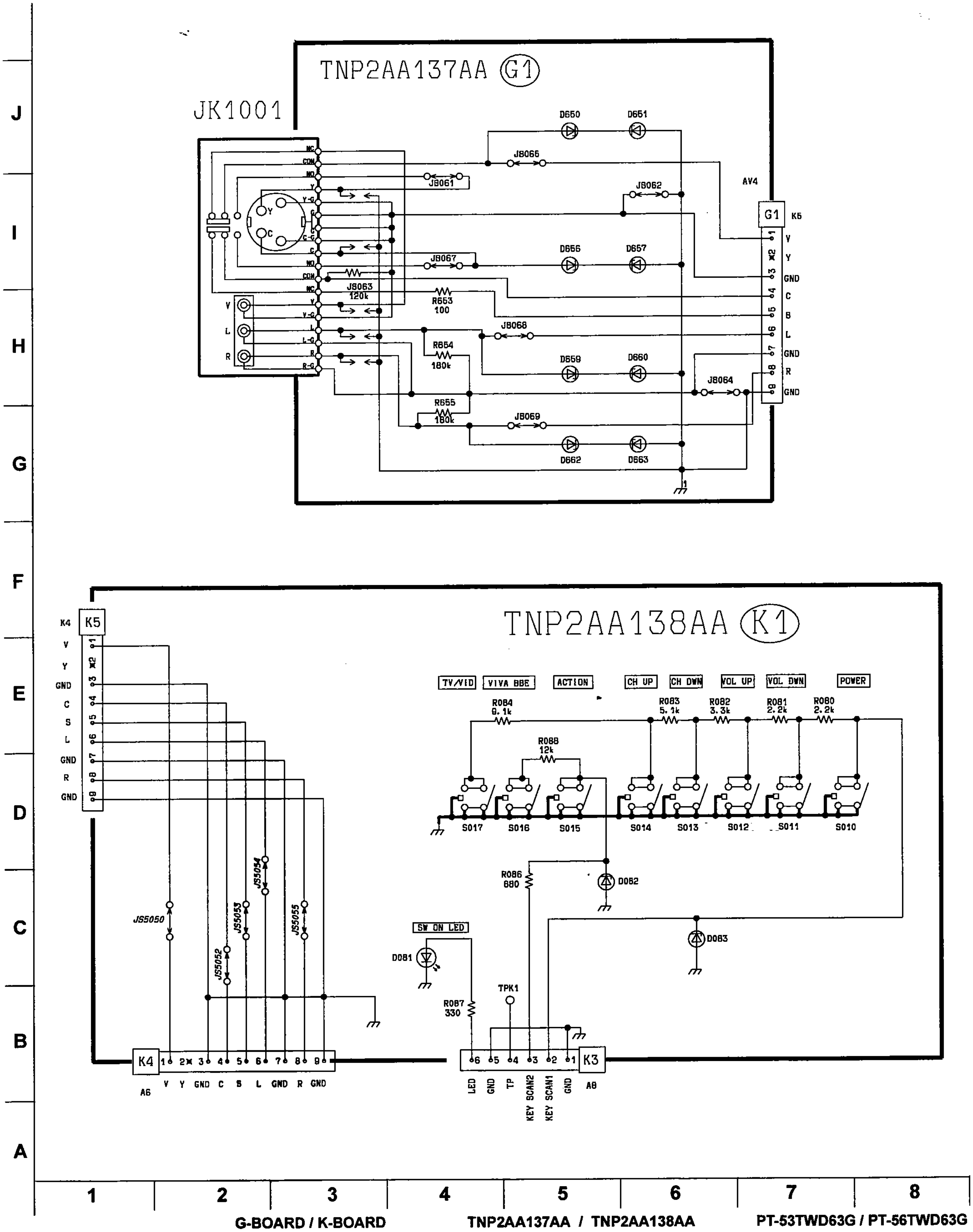
3
4
5
6
7
8

15.7. G & K Boards schematics



J
I
H
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TNP2AA137AA G1
JK1001
D650
D651
J8065
J8061
J8062
AV4
G1
K5
V
Y
GND
C
S
L
GND
R
GND
D656
D657
J8067
JS063
120k
R653
100
J8068
R654
180k
D659
D660
J8064
R655
180k
J8069
D662
D663
TNP2AA138AA K1
K4
K5
TV/VID
VIVA BBE
ACTION
CH UP
CH DWN
VOL UP
VOL DWN
POWER
R084
8.1k
R083
5.1k
R082
3.3k
R081
2.2k
R080
2.2k
R088
12k
S017
S016
S015
S014
S013
S012
S011
S010
R086
680
D082
D083
JS5050
JS5052
JS5053
JS5054
JS5055
SW ON LED
D081
TPK1
R087
330
K4
A6
V Y GND C S L GND R GND
K3
A8
LED
GND
TP
KEY SCAN2
KEY SCAN1
GND

15.8. Voltages

A - BOARD - TNP2AH051AB

IC871	
1	19.40
2	5.10
3	0.00
4	1.30
5	6.70

IC873	
1	19.40
2	2.60
3	0.00
4	1.30
5	6.70

IC1101	
1	0.00
2	0.00
3	0.00
4	0.00
5	2.30
6	2.60
7	0.00
8	3.30

IC1112	
1	0.00
2	0.00
3	0.00
4	0.00
5	4.90
6	4.90
7	4.90
8	4.90

IC2851	
1	0.00
2	10.40
3	7.70
4	5.00
5	6.70

IC872	
1	19.40
2	9.00
3	0.00
4	9.00
5	2.30

IC874	
1	19.40
2	5.10
3	0.00
4	1.30
5	6.70

IC2302			
1	-23.00	14	-21.60
2	-23.00	15	0.00
3	0.30	16	-5.50
4	22.10	17	0.00
5	9.60	18	0.00
6	5.00	19	0.00
7	0.00	20	0.00
8	2.60	21	9.50
9	0.00	22	22.10
10	0.00	23	0.20
11	0.00	24	-23.00
12	5.30	25	-12.50
13	0.00		

IC2303			
1	-23.00	14	-21.60
2	-23.00	15	0.00
3	0.30	16	-5.50
4	22.10	17	0.00
5	9.60	18	0.00
6	5.00	19	0.00
7	0.00	20	0.00
8	2.60	21	9.50
9	0.00	22	22.10
10	0.00	23	0.20
11	0.00	24	-23.00
12	5.30	25	-12.50
13	0.00		

IC2451			
1	4.40	16	8.90
2	4.50	17	4.70
3	4.50	18	0.00
4	4.50	19	4.30
5	4.50	20	4.10
6	4.50	21	4.50
7	4.50	22	4.50
8	4.50	23	4.50
9	1.60	24	4.50
10	4.50	25	4.50
11	1.60	26	4.50
12	1.60	27	4.50
13	4.90	28	4.50
14	4.90	29	4.50
15	0.00	30	4.40

A - BOARD - TNP2AH051AB

	Q2301	Q2302	Q2304	Q2451	Q2452	Q2501	Q2502	Q2503	Q2504
B	19.50	19.50	0.10	4.50	4.50	2.80	2.80	2.90	10.90
C	-0.10	-1.30	19.50	8.90	8.90	10.90	10.90	10.90	3.30
E	13.50	13.50	0.20	3.80	3.80	2.20	2.20	2.30	11.50

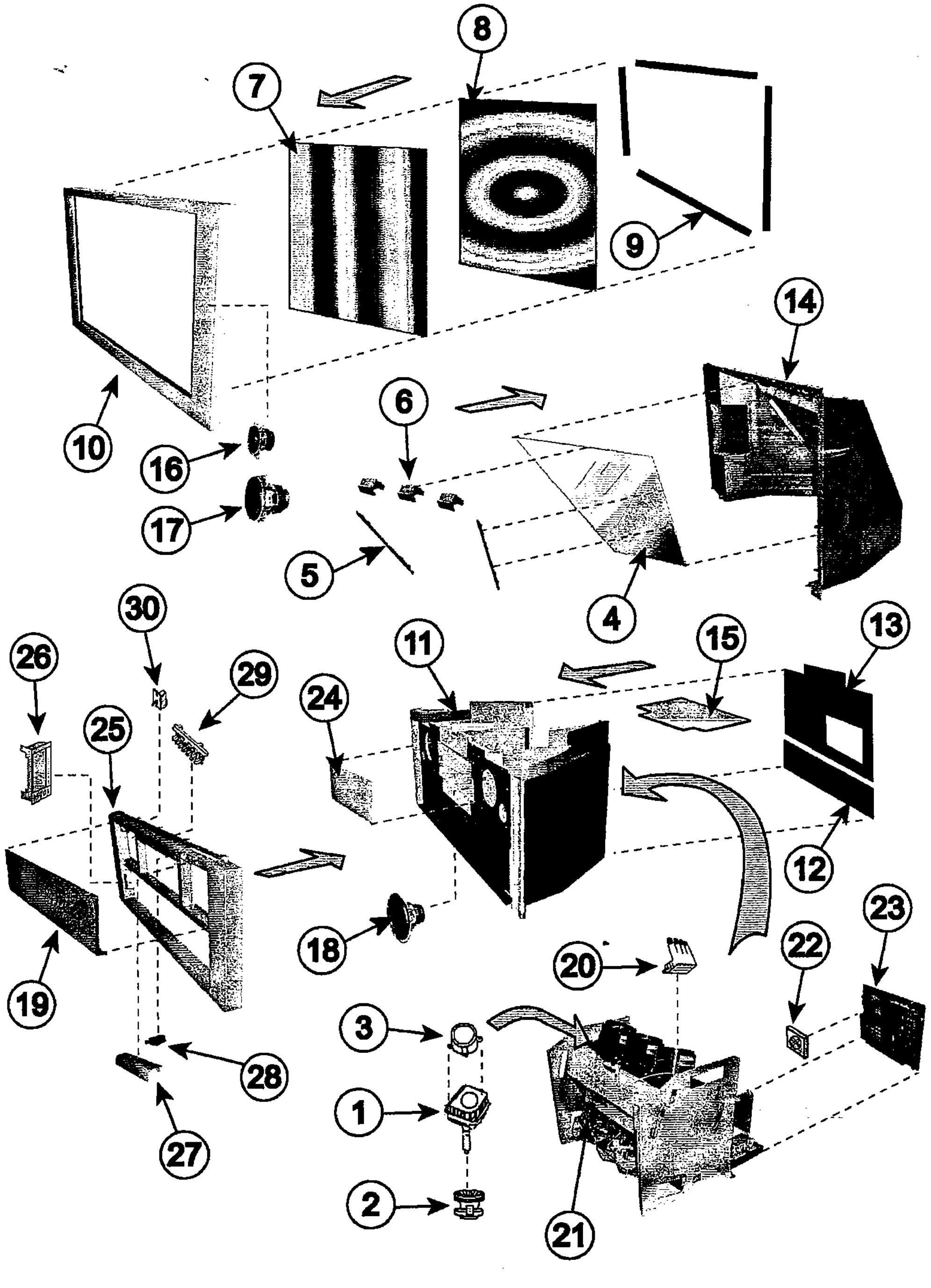
	Q2505	Q2506	Q2507	Q2508	Q2509	Q2510	Q2516	Q2517	Q2522
B	10.90	10.90	3.30	3.30	3.50	6.30	18.80	0.00	3.40
C	3.30	3.50	0.00	0.00	0.00	0.00	19.40	0.00	11.40
E	11.50	11.50	3.90	4.00	4.10	4.00	18.60	0.70	2.80

	Q2525	Q2528
B	3.40	3.50
C	11.40	11.40
E	2.80	2.90

	Q2801
G	0.00
D	10.30
S	10.40

	Q2802	Q2803	Q931	Q932	Q933
B	0.70	2.90	6.70	5.00	19.20
C	0.00	10.90	18.80	6.10	19.40
E	0.00	2.30	6.10	4.40	-0.70

16 Parts location



8
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14
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17
5
4
30
11
15
13
26
29
24
25
12
23
18
19
20
22
3
28
1
27
2
21

17 Parts list

17.1. Description of abbreviations guide

Important Safety Notice

Components identified by ⚠ mark have special characteristics important for safety.
When replacing any of these components, use manufacturer's specified parts.

Abbreviation of part name and description

1. Resistor

Example :
ERD25TJ104 **C** 100KΩ, **J**, 1/4W
Type Allowance

Type	Allowance
C : Carbon	F : ± 1%
F : Fuse	G : ± 2%
M : Metal Oxide Metal Film	J : ± 5% K : ± 10%
S : Solid	M : ± 20%
W : Wire Wound	

2. Capacitor

Example :
ECKF1H103ZF **C** 0.01µF, **Z**, 50V
Type Allowance

Type	Allowance
C : Carbon	C : ± 0.25pF
E : Electrolytic	D : ± 0.5pF
P : Polyester Polypropylene	F : ± 1pF G : ± 3%
T : Tantalum	J : ± 5%
	K : ± 10%
	L : ± 15%
	M : ± 20%
	P : ± 100%, -0%
	Z : ± 80%, -20%

17.2. Parts List

Ref. No.	Part No.	Part Name & Description	Remarks
CAPACITORS			
C001	ECEA1CKA470B	CAP E 47UF-16V	
C002	ECJ2VC1H220J	CAP C 22PF-J-50V	
C003	ECJ2VC1H220J	CAP C 22PF-J-50V	
C004	ECEA1HKA4R7B	CAP E 4.7UF-50V	
C005	ECEA1HKA2R2B	CAP E 2.2UF-50V	
C006	EEUFC1A471B	CAP E 470UF-10V	
C011	ECJ2VF1H104Z	CAP C .1UF-Z-50V	
C012	ECJ2VF1H104Z	CAP C .1UF-Z-50V	
C017	ECJ2VF1H104Z	CAP C .1UF-Z-50V	
C021	ECEA1HKAR22B	CAP E .22UF-50V	
C023	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C024	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C026	ECJ2VF1H103Z	CAP C .01UF-Z-50V	
C027	ECA1CM101B	CAP E 100UF-16V	
C028	ECJ2VF1H103Z	CAP C .01UF-Z-50V	
C051	EEUFC1E470B	CAP E 47UF-25V	
C052	ECKR1H103ZF5	CAP C 1000PF-50V	
C301	F2A2E100A025	CAP E 10UF-250V	
C302	ECCR1H221JC5	CAP C 220PF-J-50V	
C304	ECKW2H103PU8	CAP C .01UF-P-500V	
C305	F2A1H470A162	CAP E 47UF-50V	
C306	F2A2E100A025	CAP E 10UF-250V	
C307	ECKR1H103ZF5	CAP C .01UF-Z-50V	
C312	ECKC3D102KBN	CAP C 1000PF-K-2KV	
C313	ECKR2H102KB5	CAP C 1000PF-K-500V	
C331	F2A1H470A162	CAP E 47UF-50V	
C332	ECKR1H103ZF5	CAP C .01UF-Z-50V	
C333	F2A1H470A162	CAP E 47UF-50V	
C334	F2A2E470A026	CAP E 47UF-250V	
C335	ECCR1H221JC5	CAP C 220PF-J-50V	
C336	F2A1H470A162	CAP E 47UF-50V	
C337	F2A2E470A026	CAP E 47UF-250V	
C339	ECKW2H103PU8	CAP C .01UF-P-500V	
C340	ECKR1H103ZF5	CAP C .01UF-Z-50V	
C341	F2A2E100A025	CAP E 10UF-250V	
C345	ECKC3D102KBN	CAP C 1000PF-K-2KV	
C346	ECKR2H102KB5	CAP C 1000PF-K-500V	
C361	F2A1C101A159	CAP E 100UF-16V	
C362	ECCR1H221JC5	CAP C 220PF-J-50V	
C364	ECKW2H103PU8	CAP C .01UF-P-500V	
C365	F2A2E100A025	CAP E 10UF-250V	
C366	F2A1H470A162	CAP E 47UF-50V	
C367	ECKR1H103ZF5	CAP C .01UF-Z-50V	
C372	ECKC3D102KBN	CAP C 1000PF-K-2KV	
C373	ECKR2H102KB5	CAP C 1000PF-K-500V	
C374	F2A1C101A159	CAP E 100UF-16V	
C405	ECA1EHG102E	CAP E 1000UF-25V	
C406	ECA1EHG102E	CAP E 1000UF-25V	
C407	TCJ2VF1H103Z	CAP C .01UF-Z-50V	
C408	TCJ2VF1H103Z	CAP C .01UF-Z-50V	
C411	TCJ2VB1H822K	CAP C 8200PF-K-50V	
C412	ECQB1224KF3	CAP P .22UF-K-100V	
C413	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C414	TCJ2VB1H272K	CAP C 2700PF-K-50V	
C417	ECJ2VF1H104Z	CAP C .1UF-Z-50V	
C418	TCJ2VF1H223Z	CAP C .022UF-Z-50V	
C421	ECEA1CN220UB	CAP E 22UF-16V	
C458	TCJ2VF1H103Z	CAP C .01UF-Z-50V	
C461	ECA1HHG221B	CAP E 220UF-50V	
C501	ECA1EM101B	CAP E 100UF-25V	
C502	ECQV1H105JL3	CAP P 1.0UF-J-50V	
C503	ECKR2H102KB5	CAP C 1000PF-K-500V	
C509	ECWF2474JSR	CAP P .47UF-J-200V	
C510	TCJ2VC1H221J	CAP C 220PF-J-50V	
C511	ECWH20222JVY	CAP P 2200PF-J-2KV	⚠
C512	ECWH20102JVY	CAP P 1000PF-J-2KV	⚠
C513	ECQF4103JZH	CAP P .01UF-J-400V	⚠
C514	ECWH20222JVY	CAP P 2200PF-J-2KV	⚠
C518	ECKW3D221JBP	CAP C 220PF-J-2KVDC	⚠
C519	ECKW3D221JBP	CAP C 220PF-J-2KVDC	⚠
C520	ECQB1H103JF3	CAP P .01UF-J-50V	⚠
C522	ECWH20182JVY	CAP P 1800PF-J-2KV	⚠
C523	ECWH20182JVY	CAP P 1800PF-J-2KV	⚠
C524	ECQB1224JF3	CAP P .22UF-J-100V	
C525	ECEA1HN220UB	CAP E 22UF-50V	
C526	ECA2EM101E	CAP E 100UF-250V	
C527	ECKR2H102KB5	CAP C 1000PF-K-500V	
C528	ECA1HM470B	CAP E 47UF-50V	⚠
C531	ECA160V33UE	CAP E 33UF-160V	
C533	ECKR2H101KB5	CAP C 100UF-K-500V	
C535	ECA1EM471E	CAP E 470UF-25V	
C601	EEUFC1C331B	CAP E 330UF-16V	
C602	TCJ2VF1H103Z	CAP C .01UF-Z-50V	
C701	ECA1CM101B	CAP E 100UF-16V	
C702	ECKW3D271KBP	CAP C 270PF-K-2KV	
C703	ECQM2104KZW	CAP P .1UF-K-200V	
C704	ECKR2H391KB5	CAP C 390PF-K-500V	
C707	TCJ2VF1H103Z	CAP C .01UF-Z-50V	
C708	ECQE1685KFB	CAP P 6.8UF-K-100V	
C801	ECQU2A104MNB	CAP P .10UF-M-250VAC	⚠
C802	ECQU2A823MNB	CAP P .082UF-M-250V	⚠
C803	ECKCNA222ME7	CAP C 2200PF-M-125V	⚠
C804	ECKCNA222ME7	CAP C 2200PF-M-125V	⚠
C805	ECKW2H472PU7	CAP C 4700PF-P-500V	⚠
C806	ECKW2H472PU7	CAP C 4700PF-P-500V	⚠
C807	ECKW2H472PU7	CAP C 4700PF-P-500V	⚠
C808	ECA1EM101B	CAP E 100UF-25V	
C809	TCJ2VB1E223K	CAP C .022UF-K-25V	
C810	EETED2D102C	CAP E 1000PF-200V	
C812	ECA1EHG471B	CAP E 470UF-25V	
C814	ECKW3D102KBP	CAP C 1000PF-K-2KV	
C815	ECQB1H152JF3	CAP P 1500PF-J-50V	
C816	ECKW3D821KBP	CAP C 820PF-K-2KV	
C817	ECKW3D102KBP	CAP C 1000PF-K-2KV	
C819	ECQB1H102JF3	CAP P 1000PF-J-50V	
C820	ECQV1H334JL3	CAP P .33UF-J-50V	
C821	ECQB1H272KF3	CAP P 2700PF-K-50V	
C822	ECA1HM220B	CAP E 22UF-50V	
C823	TCJ2VC1H151J	CAP C 150PF-J-50V	
C824	EEUFC1V151B	CAP E 150UF-35V	
C825	ECKCNA102MBB	CAP C .001UF-M-125V	
C826	ECJ2VF1H104Z	CAP C .1UF-Z-50V	
C830	EETHC2C471B	CAP E 470PF-160V	⚠
C831	ECKW3D821KBP	CAP C 820PF-K-2KV	
C832	TCJ2VF1H103Z	CAP C .01UF-Z-50V	
C834	EEUFC1V222E	CAP E 2200UF-35V	
C836	ECKR3A331KBP	CAP C 330PF-K-1KVDC	
C837	ECA1EM472E	CAP E 4700UF-25V	
C839	ECKR3A331KBP	CAP C 330PF-K-1KVDC	
C841	ECA1EM472E	CAP E 4700UF-25V	
C842	ECKR3A331KBP	CAP C 330PF-K-1KVDC	
C843	ECA1VM222E	CAP E 2200UF-35V	
C844	ECKR3A331KBP	CAP C 330PF-K-1KVDC	
C845	ECA1VM222E	CAP E 2200UF-35V	
C846	ECKR3A331KBP	CAP C 330PF-K-1KVDC	
C848	ECA1CM101B	CAP E 100UF-16V	
C849	ECKR1H223ZF5	CAP C .022UF-Z-50V	
C851	ECQV1H104JL3	CAP P .10UF-J-50V	
C852	ECA1EM101B	CAP E 100UF-25V	
C854	ECA1CM101B	CAP E 100UF-16V	
C855	ECJ2VF1H104Z	CAP C .1UF-Z-50V	
C860	EEUFC1V561E	CAP E 560UF-35V	
C861	ECJ3VF1H224Z	CAP C .22UF-Z-50V	
C863	EEUFC1A102B	CAP E 1000UF-10V	
C863	EEUFC1C471LB	CAP E 470UF-16V	
C864	ECJ2VB1H152K	CAP C .0015UF-K-50V	
C865	ECA0JM102B	CAP E 1000UF-6.3V	
C865	ECA1CM221B	CAP E 10UF-16V	
C866	ECJ2VB1H152K	CAP C .0015UF-K-50V	
C874	ECA1CM101B	CAP E 100UF-16V	
C876	ECJ3VF1H224Z	CAP C .22UF-Z-50V	

Ref. No.	Part No.	Part Name & Description	Remarks
C877	ECA1CM221B	CAP E 10UF-16V	
C878	EEUFC1V561E	CAP E 560UF-35V	
C879	EEUFC1C471LB	CAP E 470UF-16V	
C880	ECJ2VB1H152K	CAP C .0015UF-K-50V	
C881	ECJ2VB1H152K	CAP C .0015UF-K-50V	
C882	ECA1CM221B	CAP E 10UF-16V	
C883	ECJ2VB1H152K	CAP C .0015UF-K-50V	
C885	ECJ2VB1H152K	CAP C .0015UF-K-50V	
C886	ECJ2VB1H152K	CAP C .0015UF-K-50V	
C887	EEUFC1V561E	CAP E 560UF-35V	
C888	EEUFC1V561E	CAP E 560UF-35V	
C889	ECJ2YF1E474Z	CAP C .47UF-Z-25V	
C890	TCJ2VF1H103Z	CAP C .01UF-Z-50V	
C891	EEUFC1C471LB	CAP E 470UF-16V	
C892	ECA1CM221B	CAP E 10UF-16V	
C893	EEUFC1C471LB	CAP E 470UF-16V	
C895	ECJ3VF1H224Z	CAP C .22UF-Z-50V	
C896	ECJ3VF1H224Z	CAP C .22UF-Z-50V	
C897	ECJ2VB1H152K	CAP C .0015UF-K-50V	
C902	ECQM2103KZB	CAP P .01UF-K-200V	
C903	ECKR1H103ZF5	CAP C .01UF-Z-50V	
C904	ECKR1H103ZF5	CAP C .01UF-Z-50V	
C906	ECQM2103KZB	CAP P .01UF-K-200V	
C907	F2A2C100A023	CAP E 10UF-160V	
C908	F2A1C101A159	CAP E 100UF-16V	
C909	F2A1C101A159	CAP E 100UF-16V	
C910	F2A2C100A023	CAP E 10UF-160V	
C912	F2A1H220A162	CAP E 22UF-50V	
C931	ECA1HM101B	CAP E 100UF-50V	
C932	ECJ2VB1H103K	CAP C .01UF-K-50V	
C933	ECA1CM101B	CAP E 100UF-16V	
C935	ECJ2VB1H102K	CAP C .001UF-K-50V	
C936	ECJ2VF1H103Z	CAP C .01UF-Z-50V	
C939	ECKR1H103ZF5	CAP C .01UF-Z-50V	
C940	ECQM2103KZB	CAP P .01UF-K-200V	
C941	ECKR1H103ZF5	CAP C .01UF-Z-50V	
C942	ECQM2103KZB	CAP P .01UF-K-200V	
C943	F2A2C100A023	CAP E 10UF-160V	
C944	F2A1C101A159	CAP E 100UF-16V	
C945	F2A1C101A159	CAP E 100UF-16V	
C947	F2A2C100A023	CAP E 10UF-160V	
C962	ECKR1H103ZF5	CAP C .01UF-Z-50V	
C963	ECQM2103KZB	CAP P .01UF-K-200V	
C965	ECKR1H103ZF5	CAP C .01UF-Z-50V	
C966	ECQM2103KZB	CAP P .01UF-K-200V	
C967	F2A2C100A023	CAP E 10UF-160V	
C968	F2A1C101A159	CAP E 100UF-16V	
C969	F2A1C101A159	CAP E 100UF-16V	
C970	F2A2C100A023	CAP E 10UF-160V	
C972	F2A1H220A162	CAP E 22UF-50V	
C1502	ECQE6104KFB	CAP P 100UF-K-100V	
C1503	ECQE6104KFB	CAP P 100UF-K-100V	
C1504	ECJ2VB1C104K	CAP C .1UF-K-16V	
C1505	ECA1CM101B	CAP E 100UF-16V	
C1506	TCJ2VF1H103Z	CAP C .01UF-Z-50V	
C1507	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C1508	ECA1CM101B	CAP E 100UF-16V	
C1509	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C1510	TCJ2VF1H103Z	CAP C .01UF-Z-50V	
C1511	TCJ2VC1H471J	CAP C 470PF-J-50V	
C1513	ECEA1EN101UB	CAP E 100UF-25V	
C1514	ECA1CM101B	CAP E 100UF-16V	
C2213	ECJ2VF1H104Z	CAP C .1UF-Z-50V	
C2214	ECJ2VF1H104Z	CAP C .1UF-Z-50V	
C2220	ECJ2VB1C104K	CAP C .1UF-K-16V	
C2221	ECJ2VB1C104K	CAP C .1UF-K-16V	
C2222	ECJ2VB1C104K	CAP C .1UF-K-16V	
C2223	ECJ2VB1C104K	CAP C .1UF-K-16V	
C2224	ECJ2VB1C104K	CAP C .1UF-K-16V	
C2225	ECJ2VB1C104K	CAP C .1UF-K-16V	
C2226	ECJ2VB1C104K	CAP C .1UF-K-16V	
C2227	ECJ2VB1C104K	CAP C .1UF-K-16V	
C2228	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C2230	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C2234	ECA1CM101B	CAP E 100UF-16V	
C2236	ECA0JM222B	CAP E 2200UF-6.3V	
C2236	ECA1CM101B	CAP E 100UF-16V	
C2238	ECA1CM101B	CAP E 100UF-16V	
C2239	ECA1CM101B	CAP E 100UF-16V	
C2303	ECA1VM101B	CAP E 100UF-35V	
C2304	ECJ2VF1H103Z	CAP C .01UF-Z-50V	
C2305	EEUFC1E222E	CAP E 2200UF-25V	
C2306	EEUFC1E222E	CAP E 2200UF-25V	
C2307	ECJ2VF1C474Z	CAP C .47UF-Z-16V	
C2308	ECJ2VF1C474Z	CAP C .47UF-Z-16V	
C2309	ECJ2VF1C474Z	CAP C .47UF-Z-16V	
C2310	ECQB1H224JF3	CAP P .22UF-J-50V	
C2311	ECJ2VF1C474Z	CAP C .47UF-Z-16V	
C2313	ECQB1H224JF3	CAP P .22UF-J-50V	
C2314	ECJ3VB1H104K	CAP C .1UF-K-50V	
C2315	ECJ2VB1H471K	CAP C 470PF-K-50V	
C2317	ECJ2VB1H471K	CAP C 470PF-K-50V	
C2318	ECJ3VB1H104K	CAP C .1UF-K-50V	
C2319	ECJ2VB1H331K	CAP C 330PF-K-50V	
C2320	ECJ2VB1C104K	CAP C .1UF-K-16V	
C2321	ECJ2VB1C104K	CAP C .1UF-K-16V	
C2324	ECA1CM101B	CAP E 100UF-16V	
C2326	ECA0JM332B	CAP E 3300PF-6.3V	
C2326	ECA1CM101B	CAP E 100UF-16V	
C2334	ECJ2VF1H103Z	CAP C .01UF-Z-50V	
C2337	ECA50YT2R2KB	CAP E 2.2UF-50V	
C2338	ECA50YT2R2KB	CAP E 2.2UF-50V	
C2341	ECJ2VB1H333K	CAP C .033UF-K-50V	
C2342	ECJ2VB1H333K	CAP C .033UF-K-50V	
C2344	ECQB1H224JF3	CAP P .22UF-J-50V	
C2345	EEUFC1E222E	CAP E 2200UF-25V	
C2346	ECJ2VB1H561K	CAP C 560PF-K-50V	
C2347	ECJ3VB1H104K	CAP C .1UF-K-50V	
C2350	ECJ2VB1H561K	CAP C 560PF-K-50V	
C2351	F1J1C225A083	CAP C 2.2UF-Z-16V	
C2352	EEUFC1E222E	CAP E 2200UF-25V	
C2354	ECJ2VB1H471K	CAP C 470PF-K-50V	
C2355	ECJ2VC1H270J	CAP C 27PF-J-50V	
C2356	ECJ2VB1H471K	CAP C 470PF-K-50V	
C2357	ECJ2VB1H331K	CAP C 330PF-K-50V	
C2358	ECJ3VB1H104K	CAP C .1UF-K-50V	
C2359	ECJ2VB1H331K	CAP C 330PF-K-50V	
C2360	ECJ3VB1H104K	CAP C .1UF-K-50V	
C2361	ECJ2VB1H471K	CAP C 470PF-K-50V	
C2362	ECJ2VB1H471K	CAP C 470PF-K-50V	
C2363	TCJ2VB1H102K	CAP C 1000PF-K-50V	
C2364	ECJ3VB1H104K	CAP C .1UF-K-50V	
C2365	ECJ3VB1H104K	CAP C .1UF-K-50V	
C2366	ECJ3VB1H104K	CAP C .1UF-K-50V	
C2367	ECQB1H224JF3	CAP P .22UF-J-50V	
C2368	ECJ2VB1H333K	CAP C .033UF-K-50V	
C2369	ECJ2VB1H561K	CAP C 560PF-K-50V	
C2370	ECJ2VF1C474Z	CAP C .47UF-Z-16V	
C2371	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C2372	TCJ2VB1H102K	CAP C 1000PF-K-50V	
C2373	TCJ2VB1H102K	CAP C 1000PF-K-50V	
C2374	ECJ2VF1C474Z	CAP C .47UF-Z-16V	
C2375	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C2379	ECJ3VB1H104K	CAP C .1UF-K-50V	
C2380	ECJ2VB1H331K	CAP C 330PF-K-50V	
C2381	TCJ2VB1H102K	CAP C 1000PF-K-50V	
C2382	ECJ2VB1H471K	CAP C 470PF-K-50V	
C2383	ECJ2VB1H471K	CAP C 470PF-K-50V	
C2384	ECJ2VC1H270J	CAP C 27PF-J-50V	
C2385	ECJ2VB1H561K	CAP C 560PF-K-50V	
C2386	ECJ2VB1H333K	CAP C .033UF-K-50V	
C2387	ECJ3VB1H104K	CAP C .1UF-K-50V	
C2388	F1J1C225A083	CAP C 2.2UF-Z-16V	
C2389	ECJ2VF1H103Z	CAP C .01UF-Z-50V	
C2390	ECJ2VF1H103Z	CAP C .01UF-Z-50V	
C2391	ECJ2VF1C474Z	CAP C .47UF-Z-16V	

Ref. No.	Part No.	Part Name & Description	Remarks
C2392	ECJ2VF1C474Z	CAP C .47UF-Z-16V	
C2393	ECJ2VB1H103K	CAP C .01UF-K-50V	
C2394	ECJ2VB1H103K	CAP C .01UF-K-50V	
C2451	ECEA1HN4R7UB	CAP E 4.7UF-50V	
C2452	ECEA1HN4R7UB	CAP E 4.7UF-50V	
C2453	ECJ2VB1H332K	CAP C .0033UF-K-50V	
C2454	ECJ2VB1H332K	CAP C .0033UF-K-50V	
C2455	ECJ2VB1H333K	CAP C .033UF-K-50V	
C2456	ECJ2VB1H333K	CAP C .033UF-K-50V	
C2457	ECQB1H222JF3	CAP P 2200PF-J-50V	
C2458	ECQB1H222JF3	CAP P 2200PF-J-50V	
C2459	ECJ2VB1C104K	CAP C .1UF-K-16V	
C2459	ECJ2VB1C224K	CAP C .22UF-K-16V	
C2460	ECJ2VB1C104K	CAP C .1UF-K-16V	
C2460	ECJ2VB1C224K	CAP C .22UF-K-16V	
C2461	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C2462	ECJ2VB1C104K	CAP C .1UF-K-16V	
C2463	ECJ2VB1C104K	CAP C .1UF-K-16V	
C2464	ECA1HM4R7B	CAP E 4.7UF-50V	
C2465	ECA1HM4R7B	CAP E 4.7UF-50V	
C2466	ECA1HM4R7B	CAP E 4.7UF-50V	
C2467	ECA1HM4R7B	CAP E 4.7UF-50V	
C2468	ECA1HM4R7B	CAP E 4.7UF-50V	
C2474	ECA1CM101B	CAP E 100UF-16V	
C2475	ECJ2VB1H103K	CAP C .01UF-K-50V	
C2507	ECA1CM101B	CAP E 100UF-16V	
C2587	ECJ2VF1H103Z	CAP C .01UF-Z-50V	
C2588	ECA1CM102B	CAP E 1000UF-16V	
C2589	ECJ2VF1H104Z	CAP C .1UF-Z-50V	
C2599	ECJ2VB1C104K	CAP C .1UF-K-16V	
C2803	ECCR1H470J5	CAP DISC 47-5-50V	
C2804	ECCR1H102J5	CAP C 1000PF-50V	
C2805	ECKW3D471KBP	CAP C 470PF-K-2KVDC	
C2806	ECES2DG101DG	CAP E 100UF-200V	⚠
C2807	ECA1EHG221B	CAP E 220UF-25V	
C2808	ECQE2333JFB	CAP P .033UF-J-200V	
C2809	ECKCNA471MB7	CAP C 470PF	⚠
C2811	ECKR2H471KB5	CAP C 470PF-K-500V	
C2812	ECA1HHG010B	CAP E 1UF-50V	
C2813	ECKR2H471KB5	CAP C 470PF-K-500V	
C2814	EEUFC1C332E	CAP E 3300PF-E-16V	
C2815	ECA1HHG100B	CAP E 10UF/50V	
C2816	EEUFC1C332E	CAP E 3300PF-E-16V	
C2850	ECJ2VF1H104Z	CAP C .1UF-Z-50V	
C2851	ECA1CM331B	CAP E 330UF-16V	
C2852	ECA1CM331B	CAP E 330UF-16V	
C2853	ECJ2VF1H104Z	CAP C .1UF-Z-50V	
C3003	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C3004	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C3005	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C3006	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C3007	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C3008	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C3009	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C3010	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C3020	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C3021	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C3022	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C3023	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C3024	ECA1CM471E	CAP E 470UF-16V	
C3031	ECEA1CKA101B	CAP E 100UF-16V	
C3032	ECEA1CKA101B	CAP E 100UF-16V	
C3033	ECA1CM471E	CAP E 470UF-16V	
C3034	ECA1CM471E	CAP E 470UF-16V	
C7001	ECJ3YF1E225Z	CAP C 22MF-Z-25V	
C7002	ECJ3YF1E225Z	CAP C 22MF-Z-25V	
C7004	ECA1EHG221B	CAP E 220UF-25V	
C7006	ECA1EHG221B	CAP E 220UF-25V	
C7015	TCJ2VF1H103Z	CAP C .01UF-Z-50V	
C7016	TCJ2VF1H103Z	CAP C .01UF-Z-50V	
C7017	TCJ2VF1H103Z	CAP C .01UF-Z-50V	
C7018	TCJ2VF1H103Z	CAP C .01UF-Z-50V	
C7032	ECJ2VF1H104Z	CAP C .1UF-Z-50V	
C7033	ECJ2VF1H104Z	CAP C .1UF-Z-50V	
C7034	ECJ2VF1H104Z	CAP C .1UF-Z-50V	
C7035	ECJ2VF1H104Z	CAP C .1UF-Z-50V	
C7060	ECA1CHG101B	CAP E 100UF-16V	
C7061	ECA1CHG101B	CAP E 100UF-16V	
C7150	ECA1VM470B	CAP E 47UF-35V	
C7165	ECA1VM470B	CAP E 47UF-35V	
		DIODES	
D002	MAZ31500ML	DIODE ZENER	
D003	MAZ41500MF	DIODE ZENER	
D004	MAZ31500ML	DIODE ZENER	
D005	MAZ41500MF	DIODE ZENER	
D081	LN21RCPHL	DIODE	
D082	MAZ40560MF	DIODE ZENER	
D083	MAZ40560MF	DIODE ZENER	
D301	MA2C16700E	DIODE	
D302	MAZ41000LF	DIODE ZENER	
D303	TVSRM1V1	DIODE	
D304	D1NL40V70	DIODE	
D304	MA2C165001VT	DIODE	
D306	MA2C165001VT	DIODE	
D307	MA2C165001VT	DIODE	
D312	MA2C18800E	DIODE	
D313	MA2C18800E	DIODE	
D314	MA2C18800E	DIODE	
D315	MA2C18800E	DIODE	
D331	D1NL40V70	DIODE	
D331	MA2C165001VT	DIODE	
D334	MA2C165001VT	DIODE	
D335	MA2C165001VT	DIODE	
D339	MA2C18800E	DIODE	
D340	MA2C18800E	DIODE	
D341	MA2C18800E	DIODE	
D342	MA2C18800E	DIODE	
D361	D1NL40V70	DIODE	
D361	MA2C165001VT	DIODE	
D363	MA2C165001VT	DIODE	
D364	MA2C165001VT	DIODE	
D369	MA2C18800E	DIODE	
D370	MA2C18800E	DIODE	
D371	MA2C18800E	DIODE	
D372	MA2C18800E	DIODE	
D407	MA3X152K0L	DIODE	
D409	MA3X152K0L	DIODE	
D410	MA3X152K0L	DIODE	
D411	MA3X152K0L	DIODE	
D451	B0EAKC000003	DIODE RECTIFIER	
D452	B0EAKC000003	DIODE RECTIFIER	
D453	B0EAKC000003	DIODE RECTIFIER	
D454	B0EAKC000003	DIODE RECTIFIER	
D455	B0EAKC000003	DIODE RECTIFIER	
D456	B0EAKC000003	DIODE RECTIFIER	
D458	B0EAKL000008	DIODE RECTIFIER	
D465	MAZ40390MF	DIODE ZENER	
D466	MA3X152K0L	DIODE	
D501	D1NL40V70	DIODE	
D502	MAZ31500ML	DIODE ZENER	
D503	B0HBRV000001	DIODE	
D504	MAZ42700MF	DIODE ZENER	
D509	MA2C165001VT	DIODE	
D510	MAZ40680LF	DIODE ZENER	
D511	B0HAHP000014	DIODE	
D512	D1NL40V70	DIODE	⚠
D513	MA2C165001VT	DIODE	
D515	D1NL40V70	DIODE	
D516	EU2YXV0	DIODE	
D519	AU02ZV0	DIODE	
D520	MA3X152K0L	DIODE	
D634	MA2C165001VT	DIODE	
D650	MAZ41100MF	DIODE ZENER	
D651	MAZ41100MF	DIODE ZENER	
D656	MAZ41100MF	DIODE ZENER	
D657	MAZ41100MF	DIODE ZENER	

Ref. No.	Part No.	Part Name & Description	Remarks
D659	MAZ41100MF	DIODE ZENER	
D660	MAZ41100MF	DIODE ZENER	
D662	MAZ41100MF	DIODE ZENER	
D663	MAZ41100MF	DIODE ZENER	
D702	D1NL40V70	DIODE	
D801	D3SB80-4101	DIODE	⚠
D802	ERZC10VK361G	VARISTOR	⚠
D815	MA2C165001VT	DIODE	
D816	MA2C70000F	DIODE	
D817	AU01ZV0	DIODE	
D818	MAZ32700LL	DIODE ZENER	
D819	B0BA01000046	DIODE ZENER	⚠
D822	B0AAGM000006	DIODE SWITCHING	
D825	SF5L60U-4115	DIODE GERMANIUM	⚠
D827	SF5LC30-4115	DIODE GERMANIUM	
D828	SF5LC30-4115	DIODE GERMANIUM	
D829	SF5LC30-4115	DIODE GERMANIUM	
D830	RL4ZLF-J6	DIODE	
D831	RL4ZLF-J6	DIODE	
D835	B0JAME000052	DIODE	
D837	MA3X152K0L	DIODE	
D870	B0JCME000025	DIODE	
D871	B0JCME000025	DIODE	
D876	B0JCME000025	DIODE	
D885	MA2062-BTP	DIODE	
D886	MA2120-ATP	DIODE	
D887	MA2062-BTP	DIODE	
D890	B0JCME000025	DIODE	
D891	MA2062-BTP	DIODE	
D895	MA2C165001VT	DIODE	
D896	MA3X152K0L	DIODE	
D902	MA2C18800E	DIODE	
D933	MA2C18800E	DIODE	
D953	B0ZAZ0000047	DIODE	
D962	MA2C18800E	DIODE	
D973	B0ZAZ0000047	DIODE	
D983	B0ZAZ0000047	DIODE	
D1502	B0HACW000001	DIODE	
D1503	MAZ30300LL	DIODE ZENER	⚠
D1504	B0HACW000001	DIODE	
D1505	MA2C0290BF	DIODE	
D1506	MAZ30510HL	DIODE	⚠
D1507	MAZ30300LL	DIODE ZENER	
D1510	MAZ30330LL	DIODE ZENER	
D1599	MA3X152K0L	DIODE	
D2320	MA3X152K0L	DIODE	
D2321	MA3X152K0L	DIODE	
D2323	MA3X152K0L	DIODE	
D2324	MA3X152K0L	DIODE	
D2802	B0EBKT000003	DIODE	⚠
D2806	MAZ41100MF	DIODE ZENER	
D2809	MA2C165001VT	DIODE	
D2810	EG01AF7	DIODE	
D2811	AG01ZV0	DIODE	
D2813	B0HBSM000034	DIODE	
D2814	AG01ZV0	DIODE	
D2815	MA3X152K0L	DIODE	
D2816	MAZ31500ML	DIODE ZENER	
D3001	MAZ31100ML	DIODE ZENER	
D3002	MAZ31100ML	DIODE ZENER	
D3003	MAZ31100ML	DIODE ZENER	
D3004	MAZ31100ML	DIODE ZENER	
D3005	MAZ31100ML	DIODE ZENER	
D3006	MAZ31100ML	DIODE ZENER	
D3007	MAZ31100ML	DIODE ZENER	
D3008	MAZ31100ML	DIODE ZENER	
D3009	MAZ31100ML	DIODE ZENER	
D3010	MAZ31100ML	DIODE ZENER	
D3011	MAZ31100ML	DIODE ZENER	
D3012	MAZ31100ML	DIODE ZENER	
D3013	MAZ31100ML	DIODE ZENER	
D3014	MAZ31100ML	DIODE ZENER	
D3015	MAZ31100ML	DIODE ZENER	

Ref. No.	Part No.	Part Name & Description	Remarks
D3016	MAZ31100ML	DIODE ZENER	
D3017	MAZ31100ML	DIODE ZENER	
D3018	MAZ31100ML	DIODE ZENER	
D3019	MAZ31100ML	DIODE ZENER	
D3020	MAZ31100ML	DIODE ZENER	
D3030	MAZ31100ML	DIODE ZENER	
D3031	MAZ31100ML	DIODE ZENER	
D3035	MAZ31100ML	DIODE ZENER	
D3036	MAZ31100ML	DIODE ZENER	
D3037	MAZ30330LL	DIODE ZENER	
D7060	MA3X152K0L	DIODE	
FUSES			
F801	K5D632AD0002	FUSE 6.3A/125V	⚠
INTEGRATED CIRCUITS			
IC451	C1AA00000521	VERTICAL OUTPUT	
IC701	AN6914S	EW, HHS ADJ. OP-AMP	
IC801	AN8029	POWER SUPPLY	⚠
IC802	C0EAS0000025	MAIN REGULATOR	⚠
IC805	AN78M12LB	12V REGULATOR	
IC811	0N3171RLF	OPTO COUPLER	⚠
IC871	C0DAAZH00009	5V REGULATOR	
IC872	SI-8090J	9V REGULATOR	
IC873	C0DAAZH00009	2.5V REGULATOR	
IC874	C0DAAZH00009	5V REGULATOR	
IC880	AN78N12-LB	12V REGULATOR	
IC1101	TVR2AJ173S	MAIN EEPROM	
IC1112	TVR2AJ174S	CONVERGENCE EEPROM	
IC1501	AN6562S-E1	EHT ADJ. OP-AMP	
IC2302	C1AA00000645	AUDIO AMPLIFIER	
IC2303	C1AA00000645	AUDIO AMPLIFIER	
IC2451	C1BB00000772	BBE VIVA PROCESSOR	
IC2801	C0DACZH00003	20V REGULATOR (HOT)	⚠
IC2803	AN1431T-TA	SCR	
IC2804	0N3171RLF	OPTO COUPLER	⚠
IC2851	C0CAADH00003	7.7V REGULATOR	
IC7001	C5AA00000108	CONVERGENCE AMPLIFIER	
IC7002	C5AA00000108	CONVERGENCE AMPLIFIER	
COILS			
L002	ELJPA330KF	CHIP INDUCTOR 33UH	
L003	ELJPA100KF	CHIP INDUCTOR 10UH	
L006	ELJPA100KF	CHIP INDUCTOR 10UH	
L301	ELEBD101KA	COIL 100UH	
L302	ELESN100JA	COIL PEAKING 10UH	
L303	ELESN6R8JA	COIL PEAKING 6.8UH	
L304	ELESN4R7JA	RADIAL INDUCTOR	
L331	ELESN100JA	COIL PEAKING 10UH	
L332	ELESN6R8JA	COIL PEAKING 6.8UH	
L333	G0C560KA0021	COIL PEAKING 56UH	
L334	ELESN4R7KA	COIL PEAKING 4.7UH	
L335	ELEBD101KA	COIL 100UH	
L337	G0C560KA0021	COIL PEAKING 56UH	
L361	ELEBD101KA	COIL 100UH	
L362	ELESN100JA	COIL PEAKING 10UH	
L363	ELESN150JA	COIL PEAKING 15UH	
L364	ELESN4R7JA	RADIAL INDUCTOR	
L500	TALL08TR82MAS	COIL	
L501	EXCELSA35T	FERRITE BEAD	
L510	EXCELDR25V	FERRITE BEAD	
L511	EXCELDR25V	FERRITE BEAD	
L515	EXCELDR25V	FERRITE BEAD	
L516	EXCELDR25V	FERRITE BEAD	
L555	ELH5L718	COIL	
L701	ELESN100KA	COIL PEAKING 10UH	
L702	EXCELSA35T	FERRITE BEAD	
L703	ELC18B152L	FILTER	
L704	ELC18B151G	FILTER	
L801	ELF18D650M	COIL	⚠
L802	ELF21N035A	LINE FILTER	⚠
L805	EXCELDR25V	FERRITE BEAD	
L806	EXCELDR25V	FERRITE BEAD	
L808	EXCELDR35V	FERRITE BEAD	
L810	EXCELDR25V	FERRITE BEAD	
L811	EXCELDR25V	FERRITE BEAD	

Ref. No.	Part No.	Part Name & Description	Remarks
L815	EXCELSA39E	FERRITE BEAD	
L816	EXCELSA39E	FERRITE BEAD	
L817	TALL08T680KA	COIL	
L819	EXCELDR35V	FERRITE BEAD	
L820	EXCELDR35V	FERRITE BEAD	
L821	EXCELDR35V	FERRITE BEAD	
L825	TALL08T330KA	COIL	
L826	TALL08T330KA	COIL	
L827	TALL08T330KA	COIL	
L851	TALL08T470KA	COIL	
L852	G0ZZ00001909	INT CKT	
L853	TALL08T220KA	COIL	
L854	EXCELDR35V	FERRITE BEAD	
L876	G0ZZ00001909	INT CKT	
L879	G0ZZ00001909	INT CKT	
L880	G0ZZ00001909	INT CKT	
L885	TALL08T470KA	COIL	
L886	TALL08T220KA	COIL	
L887	TALL08T220KA	COIL	
L888	TALL08T680KA	COIL	
L889	TALL08T470KA	COIL	
L892	EXCELDR35V	FERRITE BEAD	
L893	EXCELDR35V	FERRITE BEAD	
L894	EXCELDR35V	FERRITE BEAD	
L895	TALL08T220KA	COIL	
L901	EXCELSA35T	FERRITE BEAD	
L902	EXCELSA35T	FERRITE BEAD	
L903	EXCELSA35T	FERRITE BEAD	
L931	TALL08T100KA	COIL	
L933	EXCELSA35T	FERRITE BEAD	
L934	EXCELSA35T	FERRITE BEAD	
L935	EXCELSA35T	FERRITE BEAD	
L961	EXCELSA35T	FERRITE BEAD	
L962	EXCELSA35T	FERRITE BEAD	
L963	EXCELSA35T	FERRITE BEAD	
L1102	EXCELDR35V	FERRITE BEAD	
L1103	EXCELDR35V	FERRITE BEAD	
L2304	TALL08T330KA	COIL	
L2305	TALL08T330KA	COIL	
L2306	TALL08T330KA	COIL	
L2307	TALL08T330KA	COIL	
L2309	TALL08T100KA	COIL	
L2310	TALL08T100KA	COIL	
L2311	TALL08T100KA	COIL	
L2312	TALL08T100KA	COIL	
L2313	TALL08T100KA	COIL	
L2314	TALL08T100KA	COIL	
L2331	ELC12E390	COIL	
L2332	ELC12E390	COIL	
L2333	ELC12E390	COIL	
L2336	G0B800H00001	COIL	
L2337	G0B800H00001	COIL	
L2338	ELC12E390	COIL	
L2339	EXCELDR35V	FERRITE BEAD	
L2340	EXCELDR35V	FERRITE BEAD	
L2343	ELJPA100KF	CHIP INDUCTOR 10UH	
L2344	ELJPA100KF	CHIP INDUCTOR 10UH	
L2502	ELJPA100KF	CHIP INDUCTOR 10UH	
L2807	TALL08T330KA	COIL	
		TRANSISTORS	
Q025	2SC3311ATA	TRANSISTOR	
Q026	2SD601ARTX	TRANSISTOR	
Q301	2SC1473ATA	TRANSISTOR	
Q302	2SC3526H	TRANSISTOR	
Q303	2SC1473ATA	TRANSISTOR	
Q331	2SC3526H	TRANSISTOR	
Q353	2SC3942LB	TRANSISTOR	
Q354	B1BAAN000025	TRANSISTOR	
Q355	B1BCAN000004	TRANSISTOR	
Q361	2SC3311ATA	TRANSISTOR	
Q362	2SC3311ATA	TRANSISTOR	
Q363	2SC3526H	TRANSISTOR	
Q364	2SA1309ATA	TRANSISTOR	

Ref. No.	Part No.	Part Name & Description	Remarks
Q365	2SC3311ATA	TRANSISTOR	
Q366	2SC3311ATA	TRANSISTOR	
Q368	2SA1309ATA	TRANSISTOR	
Q373	2SC3942LB	TRANSISTOR	
Q374	B1BAAN000025	TRANSISTOR	
Q375	B1BCAN000004	TRANSISTOR	
Q393	2SC3942LB	TRANSISTOR	
Q394	B1BAAN000025	TRANSISTOR	
Q395	B1BCAN000004	TRANSISTOR	
Q406	2SD601ARTX	TRANSISTOR	
Q501	B1CEML000001	TRANSISTOR	
Q509	2SC1473QRTA	TRANSISTOR	
Q510	2SC1473QRTA	TRANSISTOR	
Q512	2SD601ARTX	TRANSISTOR	
Q513	2SD601ARTX	TRANSISTOR	
Q551	B1BAJW000001	TRANSISTOR	
Q606	2SD601ARTX	TRANSISTOR	
Q701	2SK2538000LB	TRANSISTOR	
Q801	2SK2917LB	TRANSISTOR	
Q802	2SD601ARTX	TRANSISTOR	
Q803	2SB709ARTX	TRANSISTOR	
Q854	2SA19610QAHW	TRANSISTOR	
Q901	2SB1321ARA	TRANSISTOR	
Q903	2SA720TA	TRANSISTOR	
Q904	2SD1992ARA	TRANSISTOR	
Q905	2SC1318ATA	TRANSISTOR	
Q906	2SC1318ATA	TRANSISTOR	
Q907	2SA720TA	TRANSISTOR	
Q931	2SC3311ATA	TRANSISTOR	
Q932	2SC3311ATA	TRANSISTOR	
Q933	2SC3311ATA	TRANSISTOR	
Q934	2SA720TA	TRANSISTOR	
Q935	2SC1318ATA	TRANSISTOR	
Q936	2SC1318ATA	TRANSISTOR	
Q937	2SA720TA	TRANSISTOR	
Q938	2SB1321ARA	TRANSISTOR	
Q941	2SD1992ARA	TRANSISTOR	
Q951	2SC3311ATA	TRANSISTOR	
Q952	2SC3311ATA	TRANSISTOR	
Q953	2SC3311ATA	TRANSISTOR	
Q955	2SA1248SRA	TRANSISTOR	
Q956	2SC3116SRA	TRANSISTOR	
Q957	2SA1248SRA	TRANSISTOR	
Q958	2SC3116SRA	TRANSISTOR	
Q959	2SA1248SRA	TRANSISTOR	
Q960	2SC3116SRA	TRANSISTOR	
Q961	2SB1321ARA	TRANSISTOR	
Q964	2SD1992ARA	TRANSISTOR	
Q965	2SA720TA	TRANSISTOR	
Q966	2SC1318ATA	TRANSISTOR	
Q967	2SC1318ATA	TRANSISTOR	
Q968	2SA720TA	TRANSISTOR	
Q1503	2SA1309ATA	TRANSISTOR	
Q1504	B1BAAV000003	TRANSISTOR	
Q1505	2SC3311ATA	TRANSISTOR	
Q2301	2SB709ARTX	TRANSISTOR	
Q2302	2SB709ARTX	TRANSISTOR	
Q2304	2SD601ARTX	TRANSISTOR	
Q2306	UN2215TX	TRANSISTOR	
Q2307	2SB709ARTX	TRANSISTOR	
Q2451	2SD601ARTX	TRANSISTOR	
Q2452	2SD601ARTX	TRANSISTOR	
Q2501	2SD601ARTX	TRANSISTOR	
Q2502	2SD601ARTX	TRANSISTOR	
Q2503	2SD601ARTX	TRANSISTOR	
Q2504	2SB709ARTX	TRANSISTOR	
Q2505	2SB709ARTX	TRANSISTOR	
Q2506	2SB709ARTX	TRANSISTOR	
Q2507	2SB709ARTX	TRANSISTOR	
Q2508	2SB709ARTX	TRANSISTOR	
Q2509	2SB709ARTX	TRANSISTOR	
Q2510	2SB709ARTX	TRANSISTOR	
Q2516	2SC3311ATA	TRANSISTOR	

Ref. No.	Part No.	Part Name & Description	Remarks
Q2517	2SA1309ATA	TRANSISTOR	
Q2522	2SC3311ATA	TRANSISTOR	
Q2525	2SC3311ATA	TRANSISTOR	
Q2528	2SC3311ATA	TRANSISTOR	
Q2801	B1DGGD000001	TRANSISTOR	
Q2802	2SD601ARTX	TRANSISTOR	
Q2803	2SD601ARTX	TRANSISTOR	
Q3001	2SB710ATX	TRANSISTOR	
Q3002	2SD601ARTX	TRANSISTOR	
Q7006	2SD601ARTX	TRANSISTOR	
Q7007	2SD601ARTX	TRANSISTOR	
Q7060	2SB709ARTX	TRANSISTOR	
Q7061	2SD601ARTX	TRANSISTOR	
RELAYS			
RL801	K6B1ADA00010	RELAY	⚠
RL802	K6B1ADA00010	RELAY	⚠
RESISTORS			
R001	ERJ6GEYJ221V	RES M 220-J-1/10W	
R002	ERJ6GEYJ221V	RES M 220-J-1/10W	
R015	ERG1SJ273P	RES M 27K-J-1W	
R023	ERDS2TJ471T	RES C 470-J-1/4W	
R024	ERDS2TJ153T	RES C 15K-J-1/4W	
R025	ERDS2TJ473T	RES C 47K-J-1/4W	
R027	ERJ6GEYJ220V	RES M 22-J-1/10W	
R072	ERDS2TJ101T	RES C 100-J-1/4W	
R073	ERDS2TJ471T	RES C 470-J-1/4W	
R080	ERDS2TJ222T	RES C 2.2K-J-1/4W	
R081	ERDS2TJ222T	RES C 2.2K-J-1/4W	
R082	ERDS2TJ332T	RES C 3.3K-J-1/4W	
R083	ERDS2TJ512T	RES C 5.1K-J-1/4W	
R084	ERDS2TJ912T	RES C 9.1K-J-1/4W	
R086	ERDS2TJ681T	RES C 680-J-1/4W	
R087	ERDS2TJ331T	RES C 330-J-1/4W	
R088	ERDS2TJ123T	RES C 12K-J-1/4W	
R301	ERDS1FJ394P	RES C 390K-J-1/2W	
R302	ERDS2TJ151T	RES C 150-J-1/4W	
R303	EROS2THF2200	RES M 220-f-1/4w	
R304	ERDS2TJ334T	RES C 330K-J-1/4W	
R305	EROS2THF2200	RES M 220-f-1/4w	
R306	EROS2THF4700	RES M 470-f-1/4w	
R307	ERDS2TJ220T	RES C 22-J-1/4W	
R308	ERDS2TJ334T	RES C 330K-J-1/4W	
R310	ERDS2TJ183T	RES C 18K-J-1/4W	
R311	ERDS2TJ470T	RES C 47-J-1/4W	
R312	ERG7ZJ272	RES M 2.7K-J-7W	
R313	ERDS1FJ103T	RES C 10K-J-1/2W	
R315	ERDS2TJ563T	RES C 56K-J-1/4W	
R316	ERDS2TJ821T	RES C 820-J-1/4W	
R319	ERG12SJ101P	RES M 100-J-1W	
R320	ERDS1FJ330P	RES C 33-J-1/2W	
R321	ERDS1FJ330P	RES C 33-J-1/2W	
R322	ERG12SJ101P	RES M 100-J-1W	
R325	ERDS2TJ473T	RES C 47K-J-1/4W	
R327	ERC12GK331D	RES C 330-K-1/2W	
R328	ERDS1TJ104T	RES C 100K-J-1/2W	
R331	EROS2THF2200	RES M 220-f-1/4w	
R332	ERDS2TJ151T	RES C 150-J-1/4W	
R333	EROS2THF2200	RES M 220-f-1/4w	
R334	ERDS2TJ220T	RES C 22-J-1/4W	
R335	EROS2THF4700	RES M 470-f-1/4w	
R337	ERDS1FJ103T	RES C 10K-J-1/2W	
R345	ERDS2TJ470T	RES C 47-J-1/4W	
R347	ERG7ZJ272	RES M 2.7K-J-7W	
R348	ERDS2TJ563T	RES C 56K-J-1/4W	
R349	ERDS2TJ821T	RES C 820-J-1/4W	
R350	ERG12SJ101P	RES M 100-J-1W	
R351	ERDS1FJ330P	RES C 33-J-1/2W	
R352	ERDS1FJ330P	RES C 33-J-1/2W	
R353	ERG12SJ101P	RES M 100-J-1W	
R354	ERDS2TJ473T	RES C 47K-J-1/4W	
R356	ERC12GK331D	RES C 330-K-1/2W	
R357	ERDS1TJ104T	RES C 100K-J-1/2W	
R361	EROS2THF1302	RES M 13k-f-1/4w	
R362	EROS2THF1002	RES M 10K-F-1/4W	
R363	ERDS2TJ220T	RES C 22-J-1/4W	
R364	ERDS2TJ102T	RES C 1K-J-1/4W	
R365	ERDS2TJ221T	RES C 220-J-1/4W	
R366	ERDS2TJ151T	RES C 150-J-1/4W	
R367	EROS2THF2200	RES M 220-f-1/4w	
R368	EROS2THF2200	RES M 220-f-1/4w	
R369	ERDS2TJ472T	RES C 4.7K-J-1/4W	
R371	EROS2THF4700	RES M 470-f-1/4w	
R372	EROS2THF82R0	RES M 82.0-f-1/4w	
R374	ERDS1FJ103T	RES C 10K-J-1/2W	
R375	ERDS2TJ470T	RES C 47-J-1/4W	
R376	ERG7ZJ272	RES M 2.7K-J-7W	
R379	ERDS2TJ563T	RES C 56K-J-1/4W	
R380	ERDS2TJ821T	RES C 820-J-1/4W	
R383	ERG12SJ101P	RES M 100-J-1W	
R384	ERDS1FJ330P	RES C 33-J-1/2W	
R385	ERDS1FJ330P	RES C 33-J-1/2W	
R386	ERG12SJ101P	RES M 100-J-1W	
R389	ERDS2TJ473T	RES C 47K-J-1/4W	
R390	ERC12GK331D	RES C 330-K-1/2W	
R391	ERDS1TJ104T	RES C 100K-J-1/2W	
R392	EROS2THF8201	RES M 8.2K-F-1/4W	
R393	EROS2THF8201	RES M 8.2K-F-1/4W	
R394	ERDS2TJ102T	RES C 1K-J-1/4W	
R395	ERDS2TJ221T	RES C 220-J-1/4W	
R396	ERDS2TJ472T	RES C 4.7K-J-1/4W	
R397	EROS2THF1201	RES M 1.2k-f-1/4w	
R398	EROS2THF3300	RES M 330-f-1/4w	
R408	ERJ6GEYJ272V	RES M 2.7K-J-1/10W	
R409	ERDS2TJ563T	RES C 56K-J-1/4W	
R410	ERJ6GEYJ224V	RES M 220K-J-1/10W	
R411	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R412	ERJ6GEYJ682V	RES M 6.8K-J-1/10W	
R415	ERG3FJ331H	RES M 330-J-3W	
R422	ERJ6ENF1800V	RES M 180-F-1/10W	
R423	ERJ6ENF5601V	RES M 5.6K-F-1/10W	
R425	ERDS1FJ1R0T	RES C 1.0-J-1/2W	
R426	ERJ6ENF1502V	RES M 15K-F-1/10W	
R428	ERJ6ENF1002V	RES M 10K-F-1/10W	
R434	ERX12SJ1R8V	RES M 1.8-J-1/2W	
R435	ERX12SJ1R8V	RES M 1.8-J-1/2W	
R464	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R465	ERJ6GEYJ392V	RES M 3.9K-J-1/10W	
R466	ERJ6GEYJ562V	RES M 5.6K-J-1/10W	
R470	ERDS2TJ331T	RES C 330-J-1/4W	
R471	ERDS2TJ331T	RES C 330-J-1/4W	
R472	ERDS2TJ331T	RES C 330-J-1/4W	
R501	ERJ6GEYJ104V	RES M 100K-J-1/10W	
R502	ERJ6GEYJ680V	RES M 68-J-1/10W	
R503	ERG2FJ180H	RES M 18-J-2W	
R504	ERG3FJ271H	RES M 270-J-3W	
R505	ERG1SJ120P	RES M 12-J-1W	
R506	ERX1SJR47P	RES M .47-J-1W	
R512	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R513	ERDS2TJ471T	RES C 470-J-1/4W	
R514	EROS2THF5602	RES M 56K-F-1/4W	
R515	EROS2THF4752	RES M 47.5K-F-1/4W	
R516	ERJ6GEYJ101V	RES M 100-J-1/10W	
R517	ERDS2TJ103T	RES C 10K-J-1/4W	
R518	ERX12SJR22V	RES M .22-J-1/2W	
R519	ERQ12HKR22P	RES F .22-K-1/2W	
R520	ERQ12HJ330P	RES F 33-J-1/2W	⚠
R521	EROS2THF2702	RES M 27k-f-1/4w	⚠
R522	EROS2THF7681	RES M 7.68k-f-1/4w	⚠
R523	ERDS2TJ275T	RES C 2.7MEG-J-1/4W	
R525	ERJ6GEYJ152V	RES M 1.5K-J-1/10W	
R534	EROS2THF1203	RES M 120K-F-1/4W	
R535	ERDS2TJ392T	RES C 3.9K-J-1/4W	
R541	ERDS2TJ563T	RES C 56K-J-1/4W	
R550	EROS2THF1002	RES M 10K-F-1/4W	
R560	ERJ6GEYJ101V	RES M 100-J-1/10W	
R561	ERJ6GEYJ103V	RES M 10K-J-1/10W	

Ref. No.	Part No.	Part Name & Description	Remarks
R562	ERJ6GEYJ104V	RES M 100K-J-1/10W	
R621	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R622	ERJ6GEYJ152V	RES M 1.5K-J-1/10W	
R624	ERJ6GEYJ101V	RES M 100-J-1/10W	
R643	ERJ6GEYJ101V	RES M 100-J-1/10W	
R653	ERDS2TJ101T	RES C 100-J-1/4W	
R654	ERDS2TJ184T	RES C 180K-J-1/4W	
R655	ERDS2TJ184T	RES C 180K-J-1/4W	
R704	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R706	ERDS1FJ680T	RES C 68-J-1/2W	
R708	ERF5AK4R7H	RES W 4.7-K-5W	
R805	ERDS2TJ101T	RES C 100-J-1/4W	
R808	ERX12SZJR12P	RES M .12-J-1/2W	
R809	ERJ6GEYJ225V	RES M 2.2M-J-1/10W	
R810	ERX12SZJR12P	RES M .12-J-1/2W	
R811	ERX12SZJR12P	RES M .12-J-1/2W	
R812	ERDS2TJ103T	RES C 10K-J-1/4W	
R813	ERDS1FJ561T	RES C 560-J-1/2W	
R814	ERDS2TJ4R7T	RES C 4.7-J-1/4W	
R815	ERJ6GEYJ301V	RES M 300-J-1/10W	
R816	ERDS2TJ471T	RES C 470-J-1/4W	
R817	ERJ6ENF2001V	RES M 2K-F-1/10W	
R818	ERDS1FJ100T	RES C 10-J-1/2W	
R820	ERDS1FJ470T	RES C 47-J-1/2W	
R822	ERJ6GEYJ222V	RES M 2.2K-J-1/10W	
R832	ERD75TAJ825	RES C 8.2MEG-J-3/4W	⚠
R833	ERJ6GEYJ101V	RES M 100-J-1/10W	
R835	ERDS2TJ101T	RES C 100-J-1/4W	
R836	ERJ6GEYJ101V	RES M 100-J-1/10W	
R839	ERJ6GEYJ222V	RES M 2.2K-J-1/10W	
R840	ERJ6GEYJ101V	RES M 100-J-1/10W	
R846	ERDS2TJ223T	RES C 22K-J-1/4W	
R847	ERDS2TJ272T	RES C 2.7K-J-1/4W	
R857	ERX1SJ1R0P	RES M 1.0-J-1W	
R858	ERX1SJ1R0P	RES M 1.0-J-1W	
R859	ERDS2TJ103T	RES C 10K-J-1/4W	
R860	ERDS1FJ222T	RES C 2200-J-1/2W	
R862	ERG3FJ333H	RES M 33K-J-3W	
R863	ERJ6ENF3001V	RES M 3K-F-1/10W	
R865	ERJ6GEYJ153V	RES M 15K-J-1/10W	
R866	ERJ6GEYJ332V	RES M 3.3K-J-1/10W	
R867	ERJ6GEYJ472V	RES M 4.7K-J-1/10W	
R888	ERJ6ENF1001V	RES M 1K-F-1/10W	
R889	ERJ6ENF1001V	RES M 1K-F-1/10W	
R893	ERJ6ENF1001V	RES M 1K-F-1/10W	
R895	ERJ6GEYJ100V	RES M 10-J-1/10W	
R896	ERJ6ENF1001V	RES M 1K-F-1/10W	
R897	ERJ6ENF3001V	RES M 3K-F-1/10W	
R901	ERDS2FJ122T	RES C 1.2K-J-1/2W	
R902	ERDS2TJ103T	RES C 10K-J-1/4W	
R903	ERDS2TJ683T	RES C 68K-J-1/4W	
R904	ERDS2TJ683T	RES C 68K-J-1/4W	
R905	ERDS2TJ103T	RES C 10K-J-1/4W	
R906	ERDS2TJ122T	RES C 1.2K-J-1/4W	
R907	ERDS1FVJ390T	RES C 39-J-1/2W	
R908	ERDS1FVJ390T	RES C 39-J-1/2W	
R909	ERDS1FVJ8R2T	RES C 8.2-J-1/2W	
R910	ERDS2TJ8R2T	RES C 8.2-J-1/4W	
R911	ERG3SJS221H	RES M 220-J-3W	
R912	ERDS2TJ681T	RES C 680-J-1/4W	
R913	ERDS1FVJ152T	RES C 1.5K-J-1/2W	
R914	ERDS1FVJ152T	RES C 1.5K-J-1/2W	
R915	ERQ14AJ220P	RES F 22-J-1/4W	
R916	ERQ14AJ220P	RES F 22-J-1/4W	
R917	ERQ14AJ100P	RES F 10-J-1/4W	
R925	ERDS2TJ151T	RES C 150-J-1/4W	
R926	ERDS2TJ151T	RES C 150-J-1/4W	
R928	ERQ14AJ220P	RES F 22-J-1/4W	
R929	ERDS2TJ101T	RES C 100-J-1/4W	
R930	ERJ6GEYJ330V	RES M 33-J-1/10W	
R931	ERJ6GEYJ101V	RES M 100-J-1/10W	
R932	ERJ6GEYJ273V	RES M 27K-J-1/10W	
R933	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R934	ERJ6GEYJ153V	RES M 15K-J-1/10W	
R935	ERJ6GEYJ822V	RES M 8.2K-J-1/10W	
R936	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R937	ERJ6GEYJ471V	RES M 470-J-1/10W	
R938	ERJ6GEYJ391V	RES M 390-J-1/10W	
R939	ERJ6GEYJ470V	RES M 47-J-1/10W	
R942	ERDS1FVJ152T	RES C 1.5K-J-1/2W	
R943	ERDS1FVJ152T	RES C 1.5K-J-1/2W	
R944	ERDS2TJ471T	RES C 470-J-1/4W	
R945	ERDS2TJ471T	RES C 470-J-1/4W	
R946	ERQ14AJ100P	RES F 10-J-1/4W	
R947	ERQ14AJ220P	RES F 22-J-1/4W	
R948	ERDS2FJ122T	RES C 1.2K-J-1/2W	
R949	ERDS2TJ103T	RES C 10K-J-1/4W	
R950	ERDS2TJ683T	RES C 68K-J-1/4W	
R951	ERDS2TJ683T	RES C 68K-J-1/4W	
R952	ERDS2TJ103T	RES C 10K-J-1/4W	
R953	ERDS2TJ122T	RES C 1.2K-J-1/4W	
R954	ERDS1FVJ390T	RES C 39-J-1/2W	
R955	ERDS1FVJ390T	RES C 39-J-1/2W	
R956	ERDS1FVJ8R2T	RES C 8.2-J-1/2W	
R957	ERDS2TJ8R2T	RES C 8.2-J-1/4W	
R958	ERG3SJS221H	RES M 220-J-3W	
R959	ERDS2TJ471T	RES C 470-J-1/4W	
R961	ERDS2FJ122T	RES C 1.2K-J-1/2W	
R962	ERDS2TJ103T	RES C 10K-J-1/4W	
R963	ERDS2TJ683T	RES C 68K-J-1/4W	
R964	ERDS2TJ683T	RES C 68K-J-1/4W	
R965	ERDS2TJ103T	RES C 10K-J-1/4W	
R966	ERDS2TJ122T	RES C 1.2K-J-1/4W	
R967	ERDS1FVJ390T	RES C 39-J-1/2W	
R968	ERDS1FVJ390T	RES C 39-J-1/2W	
R969	ERDS1FVJ8R2T	RES C 8.2-J-1/2W	
R970	ERDS2TJ8R2T	RES C 8.2-J-1/4W	
R971	ERG3SJS221H	RES M 220-J-3W	
R972	ERDS2TJ681T	RES C 680-J-1/4W	
R973	ERDS1FVJ152T	RES C 1.5K-J-1/2W	
R974	ERDS1FVJ152T	RES C 1.5K-J-1/2W	
R975	ERQ14AJ100P	RES F 10-J-1/4W	
R976	ERQ14AJ220P	RES F 22-J-1/4W	
R978	ERQ14AJ220P	RES F 22-J-1/4W	
R1502	ERJ6GEYJ222V	RES M 2.2K-J-1/10W	
R1503	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R1504	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R1505	ERDS2TJ102T	RES C 1K-J-1/4W	
R1506	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R1507	ERG3SJD152L	RES M 1.5K-J-3W	
R1508	ERJ6GEYJ152V	RES M 1.5K-J-1/10W	
R1509	ERDS2TJ102T	RES C 1K-J-1/4W	
R1510	ERG2SJD333L	RES M 33K-J-2W	
R1511	ERG2SJD333L	RES M 33K-J-2W	
R1512	ERJ6ENF2201V	RES M 2.2K-F-1/10W	
R1514	ERG2SJD333L	RES M 33K-J-2W	
R1515	ERJ6ENF1001V	RES M 1K-F-1/10W	
R1516	ERJ6GEYJ101V	RES M 100-J-1/10W	
R1517	ERJ6ENF3571V	RES M 3.57K-F-1/10W	
R1518	ERG2SJD333L	RES M 33K-J-2W	
R1519	ERDS2TJ101T	RES C 100-J-1/4W	
R1520	ERDS2TJ221T	RES C 220-J-1/4W	
R1521	EROS2THF1500	RES M 150-F-1/4W	
R1522	ERC12GK103D	RES C 10K-K-1/2W	
R1523	ERDS2TJ104T	RES C 100K-J-1/4W	
R1524	EROS2THF1401	RES M 1.4K-F-1/4W	
R1527	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R1528	ERDS2TJ332T	RES C 3.3K-J-1/4W	
R1529	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R1532	ERJ6ENF2201V	RES M 2.2K-F-1/10W	
R1542	ERG2SJD333L	RES M 33K-J-2W	
R1544	ERJ6GEYJ471V	RES M 470-J-1/10W	
R1546	ERJ6GEYJ221V	RES M 220-J-1/10W	
R1599	ERJ6ENF9761V	RES M 9760-F-1/10W	
R2222	ERDS2TJ220T	RES C 22-J-1/4W	
R2223	ERDS2TJ220T	RES C 22-J-1/4W	

Ref. No.	Part No.	Part Name & Description	Remarks
R2224	ERDS2TJ220T	RES C 22-J-1/4W	
R2225	ERDS2TJ220T	RES C 22-J-1/4W	
R2226	ERDS2TJ220T	RES C 22-J-1/4W	
R2227	ERDS2TJ220T	RES C 22-J-1/4W	
R2228	ERDS2TJ220T	RES C 22-J-1/4W	
R2229	ERDS2TJ220T	RES C 22-J-1/4W	
R2230	ERDS2TJ220T	RES C 22-J-1/4W	
R2231	ERDS2TJ220T	RES C 22-J-1/4W	
R2232	ERDS2TJ220T	RES C 22-J-1/4W	
R2233	ERDS2TJ220T	RES C 22-J-1/4W	
R2244	ERDS2TJ220T	RES C 22-J-1/4W	
R2301	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R2302	ERJ6GEYJ392V	RES M 3.9K-J-1/10W	
R2303	ERJ6GEYJ271V	RES M 270-J-1/10W	
R2304	ERJ6GEYJ473V	RES M 47K-J-1/10W	
R2305	ERJ6GEYJ223V	RES M 22K-J-1/10W	
R2307	ERJ6GEYJ223V	RES M 22K-J-1/10W	
R2308	ERJ6GEYJ183V	RES M 18K-J-1/10W	
R2309	ERJ6GEYJ683V	RES M 68K-J-1/10W	
R2310	ERJ6GEYJ223V	RES M 22K-J-1/10W	
R2311	ERJ6ENF1303V	RES M 130K-F-1/10W	
R2312	ERJ6GEYJ223V	RES M 22K-J-1/10W	
R2313	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R2314	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R2315	ERJ6GEYJ122V	RES M 1.2K-J-1/10W	
R2316	ERJ6GEYJ122V	RES M 1.2K-J-1/10W	
R2317	ERJ6GEYJ683V	RES M 68K-J-1/10W	
R2318	ERJ6ENF5601V	RES M 5.6K-F-1/10W	
R2319	ERJ6ENF1202V	RES M 1.2K-F-1/10W	
R2320	ERJ12YJ101U	RES M 100-J-1/2W	
R2321	ERJ6ENF5362V	RES M 53.6K-F-1/10W	
R2322	ERJ6ENF1202V	RES M 1.2K-F-1/10W	
R2323	ERJ6ENF1202V	RES M 1.2K-F-1/10W	
R2324	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R2325	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R2326	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R2327	ERJ6GEYJ473V	RES M 47K-J-1/10W	
R2328	ERJ6GEYJ273V	RES M 27K-J-1/10W	
R2329	ERJ6GEYJ472V	RES M 4.7K-J-1/10W	
R2330	ERJ6ENF5601V	RES M 5.6K-F-1/10W	
R2331	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R2332	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R2334	ERJ6ENF1001V	RES M 1K-F-1/10W	
R2335	ERJ6ENF1001V	RES M 1K-F-1/10W	
R2336	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R2337	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R2339	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R2340	ERJ6ENF1201V	RES M 1.2K-F-1/10W	
R2341	ERJ6ENF1201V	RES M 1.2K-F-1/10W	
R2342	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R2344	ERJ6GEYJ472V	RES M 4.7K-J-1/10W	
R2345	ERJ6GEYJ273V	RES M 27K-J-1/10W	
R2346	ERJ6GEYJ472V	RES M 4.7K-J-1/10W	
R2348	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R2349	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R2350	ERJ6ENF1202V	RES M 1.2K-F-1/10W	
R2351	ERJ6GEYJ473V	RES M 47K-J-1/10W	
R2352	ERJ6GEYJ472V	RES M 4.7K-J-1/10W	
R2353	ERJ6ENF5601V	RES M 5.6K-F-1/10W	
R2354	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R2355	ERJ6GEYJ683V	RES M 68K-J-1/10W	
R2356	ERJ6GEYJ223V	RES M 22K-J-1/10W	
R2357	ERJ6ENF1303V	RES M 130K-F-1/10W	
R2358	ERJ6GEYJ223V	RES M 22K-J-1/10W	
R2359	ERJ6GEYJ683V	RES M 68K-J-1/10W	
R2360	ERJ6ENF5601V	RES M 5.6K-F-1/10W	
R2361	ERJ6ENF1202V	RES M 1.2K-F-1/10W	
R2362	ERJ12YJ101U	RES M 100-J-1/2W	
R2363	ERJ6ENF5362V	RES M 53.6K-F-1/10W	
R2364	ERJ6ENF1202V	RES M 1.2K-F-1/10W	
R2365	ERJ6ENF1202V	RES M 1.2K-F-1/10W	
R2366	ERJ6ENF1202V	RES M 1.2K-F-1/10W	
R2367	ERJ12YJ101U	RES M 100-J-1/2W	
R2368	ERJ6ENF5362V	RES M 53.6K-F-1/10W	
R2369	ERJ12YJ101U	RES M 100-J-1/2W	
R2370	ERJ6ENF5362V	RES M 53.6K-F-1/10W	
R2371	ERJ6GEYJ101V	RES M 100-J-1/10W	
R2372	ERJ6GEYJ101V	RES M 100-J-1/10W	
R2373	ERJ6GEYJ101V	RES M 100-J-1/10W	
R2374	ERJ6GEYJ220V	RES M 22-J-1/10W	
R2375	ERJ6GEYJ220V	RES M 22-J-1/10W	
R2376	ERDS2TJ220T	RES C 22-J-1/4W	
R2377	ERDS2TJ220T	RES C 22-J-1/4W	
R2378	ERDS2TJ220T	RES C 22-J-1/4W	
R2379	ERDS2TJ220T	RES C 22-J-1/4W	
R2380	ERDS2TJ220T	RES C 22-J-1/4W	
R2381	ERDS2TJ220T	RES C 22-J-1/4W	
R2386	ERJ6GEYJ101V	RES M 100-J-1/10W	
R2391	ERJ6ENF1201V	RES M 1.2K-F-1/10W	
R2392	ERJ6ENF1201V	RES M 1.2K-F-1/10W	
R2402	ERJ6GEYJ101V	RES M 100-J-1/10W	
R2407	ERDS2TJ220T	RES C 22-J-1/4W	
R2408	ERDS2TJ220T	RES C 22-J-1/4W	
R2409	ERDS2TJ220T	RES C 22-J-1/4W	
R2410	ERDS2TJ220T	RES C 22-J-1/4W	
R2411	ERDS2TJ220T	RES C 22-J-1/4W	
R2412	ERDS2TJ220T	RES C 22-J-1/4W	
R2413	ERDS2TJ220T	RES C 22-J-1/4W	
R2414	ERDS2TJ220T	RES C 22-J-1/4W	
R2419	ERJ6GEYJ221V	RES M 220-J-1/10W	
R2420	ERJ6GEYJ101V	RES M 100-J-1/10W	
R2421	ERJ6GEYJ101V	RES M 100-J-1/10W	
R2422	ERJ6GEYJ101V	RES M 100-J-1/10W	
R2423	ERJ6GEYJ101V	RES M 100-J-1/10W	
R2424	ERJ6GEYJ101V	RES M 100-J-1/10W	
R2425	ERJ6GEYJ101V	RES M 100-J-1/10W	
R2426	ERJ6GEYJ101V	RES M 100-J-1/10W	
R2451	ERJ6GEYJ681V	RES M 680-J-1/10W	
R2452	ERJ6GEYJ681V	RES M 680-J-1/10W	
R2456	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R2457	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R2459	ERJ6GEYJ123V	RES M 12K-J-1/10W	
R2460	ERJ6GEYJ101V	RES M 100-J-1/10W	
R2461	ERJ6GEYJ101V	RES M 100-J-1/10W	
R2501	ERJ6ENF2700V	RES M 270-F-1/10W	
R2502	ERJ6ENF4700V	RES M 470-F-1/10W	
R2503	ERJ6ENF4700V	RES M 470-F-1/10W	
R2504	ERJ6GEYJ221V	RES M 220-J-1/10W	
R2505	ERJ6ENF33R0V	RES M 33.0K-F-1/10W	
R2506	ERJ6ENF33R0V	RES M 33.0K-F-1/10W	
R2507	ERJ6GEYJ221V	RES M 220-J-1/10W	
R2508	ERJ6ENF4700V	RES M 470-F-1/10W	
R2509	ERJ6ENF2700V	RES M 270-F-1/10W	
R2510	ERJ6ENF4700V	RES M 470-F-1/10W	
R2511	ERJ6ENF2700V	RES M 270-F-1/10W	
R2512	ERJ6ENF4700V	RES M 470-F-1/10W	
R2513	ERJ6ENF33R0V	RES M 33.0K-F-1/10W	
R2514	ERJ6ENF4700V	RES M 470-F-1/10W	
R2515	ERJ6GEYJ221V	RES M 220-J-1/10W	
R2516	ERJ6GEYJ470V	RES M 47-J-1/10W	
R2517	ERDS2TJ182T	RES C 1.8K-J-1/4W	
R2518	ERDS2TJ330T	RES C 33-J-1/4W	
R2519	ERJ6GEYJ100V	RES M 10-J-1/10W	
R2520	ERJ6GEYJ100V	RES M 10-J-1/10W	
R2537	ERJ6GEYJ122V	RES M 1.2K-J-1/10W	
R2538	ERJ6GEYJ122V	RES M 1.2K-J-1/10W	
R2539	ERJ6GEYJ122V	RES M 1.2K-J-1/10W	
R2541	ERJ6GEYJ122V	RES M 1.2K-J-1/10W	
R2542	ERJ6GEYJ122V	RES M 1.2K-J-1/10W	
R2543	ERJ6GEYJ122V	RES M 1.2K-J-1/10W	
R2568	ERJ6ENF6801V	RES M 6.8K-F-1/10W	
R2569	ERJ6ENF8201V	RES M 8.2K-F-1/10W	
R2570	ERJ6GEYJ100V	RES M 10-J-1/10W	
R2571	ERJ6GEYJ100V	RES M 10-J-1/10W	
R2573	ERJ6GEYJ221V	RES M 220-J-1/10W	
R2576	ERJ6GEYJ181V	RES M 180-J-1/10W	

Ref. No.	Part No.	Part Name & Description	Remarks
R2578	ERJ6GEYJ100V	RES M 10-J-1/10W	
R2580	ERJ6GEYJ221V	RES M 220-J-1/10W	
R2583	ERJ6GEYJ181V	RES M 180-J-1/10W	
R2584	ERJ6GEYJ100V	RES M 10-J-1/10W	
R2590	ERJ6GEYJ181V	RES M 180-J-1/10W	
R2801	ERDS2TJ223T	RES C 22K-J-1/4W	
R2802	EROS2THF1502	RES M 15.0k-f-1/4w	
R2803	ERF2AK5R6	RES M 5.6-K-2W	⚠
R2804	ERG2FJ393H	RES M 39K-J-2W	
R2806	ERDS2TJ184T	RES C 180K-J-1/4W	
R2807	ERDS2TJ102T	RES C 1K-J-1/4W	
R2808	ERDS2TJ102T	RES C 1K-J-1/4W	
R2810	ERDS2TJ823T	RES C 82K-J-1/4W	
R2811	EROS2THF7151	RES M 7.15K-F-1/4W	
R2813	EROS2THF2201	RES M 2.2k-f-1/4w	
R2814	ERG1FJS102E	RES M 1K-J-1W	
R2816	ERC12GK825C	RES C 820MEG-K-1/8W	⚠
R2850	ERJ6GEYJ472V	RES M 4.7K-J-1/10W	
R2851	ERJ6ENF1001V	RES M 1K-F-1/10W	
R2852	ERJ6ENF4530V	RES M 453-F-1/10W	
R2853	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R2854	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R2855	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R2856	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R2858	ERDS2TJ272T	RES C 2.7K-J-1/4W	
R2859	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R2860	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R3004	ERJ6ENF75R0V	RES M 75.0-F-1/10W	
R3008	ERJ6ENF75R0V	RES M 75.0-F-1/10W	
R3010	ERJ6GEYJ184V	RES M 180K-J-1/10W	
R3011	ERJ6GEYJ184V	RES M 180K-J-1/10W	
R3013	ERJ6GEYJ184V	RES M 180K-J-1/10W	
R3014	ERJ6GEYJ184V	RES M 180K-J-1/10W	
R3015	ERJ6GEYJ184V	RES M 180K-J-1/10W	
R3016	ERJ6GEYJ184V	RES M 180K-J-1/10W	
R3024	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R3026	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R3028	ERJ6GEYJ184V	RES M 180K-J-1/10W	
R3029	ERJ6GEYJ184V	RES M 180K-J-1/10W	
R3035	ERJ6GEYJ184V	RES M 180K-J-1/10W	
R3036	ERJ6GEYJ184V	RES M 180K-J-1/10W	
R3044	ERJ6GEYJ222V	RES M 2.2K-J-1/10W	
R3045	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R3046	ERJ6GEYJ222V	RES M 2.2K-J-1/10W	
R3047	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R3048	ERJ6GEYJ152V	RES M 1.5K-J-1/10W	
R3049	ERJ6GEYJ104V	RES M 100K-J-1/10W	
R7001	ERG2FJ820H	RES M 82-J-2W	
R7002	ERG2FJ121H	RES M 120-J-2W	
R7003	ERG2FJ820H	RES M 82-J-2W	
R7004	ERG2FJ121H	RES M 120-J-2W	
R7005	ERG2FJ820H	RES M 82-J-2W	
R7006	ERG2FJ121H	RES M 120-J-2W	
R7011	ERX2FJ2R2H	RES M 2.2-J-2W	
R7012	ERX2FJ2R2H	RES M 2.2-J-2W	
R7013	ERX2FJ2R2H	RES M 2.2-J-2W	
R7014	ERX2FJ2R2H	RES M 2.2-J-2W	
R7015	ERX2FJ2R2H	RES M 2.2-J-2W	
R7016	ERX2FJ2R2H	RES M 2.2-J-2W	
R7023	ERJ6GEYJ273V	RES M 27K-J-1/10W	
R7024	ERJ6GEYJ472V	RES M 4.7K-J-1/10W	
R7026	ERJ6GEYJ222V	RES M 2.2K-J-1/10W	
R7027	ERJ6GEYJ332V	RES M 3.3K-J-1/10W	
R7029	ERJ6GEYJ332V	RES M 3.3K-J-1/10W	
R7030	ERJ6GEYJ222V	RES M 2.2K-J-1/10W	
R7031	ERJ6GEYJ222V	RES M 2.2K-J-1/10W	
R7032	ERJ6GEYJ332V	RES M 3.3K-J-1/10W	
R7034	ERJ6GEYJ273V	RES M 27K-J-1/10W	
R7035	ERJ6GEYJ472V	RES M 4.7K-J-1/10W	
R7036	ERJ6GEYJ222V	RES M 2.2K-J-1/10W	
R7037	ERJ6GEYJ222V	RES M 2.2K-J-1/10W	
R7038	ERJ6GEYJ222V	RES M 2.2K-J-1/10W	
R7040	ERJ6GEYJ103V	RES M 10K-J-1/10W	

Ref. No.	Part No.	Part Name & Description	Remarks
R7041	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R7045	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R7046	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R7047	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R7048	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R7052	ERJ6GEYJ332V	RES M 3.3K-J-1/10W	
R7055	ERJ6GEYJ332V	RES M 3.3K-J-1/10W	
R7058	ERJ6GEYJ332V	RES M 3.3K-J-1/10W	
R7059	ERJ6GEYJ104V	RES M 100K-J-1/10W	
R7060	ERX1SJR27P	RES M .27-J-1W	
R7061	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R7062	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R7063	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R7064	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R7065	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R7066	ERX1SJR27P	RES M .27-J-1W	
		SWITCHES	
S010	EVQPBD05R	SWITCH	
S011	EVQPBD05R	SWITCH	
S012	EVQPBD05R	SWITCH	
S013	EVQPBD05R	SWITCH	
S014	EVQPBD05R	SWITCH	
S015	EVQPBD05R	SWITCH	
S016	EVQPBD05R	SWITCH	
S017	EVQPBD05R	SWITCH	
		TRANSFORMERS	
T801	ETS42AD495AD	TRANSFORMER	⚠
T501	ETH19K204AZ	TRANSFORMER	
T551	KFT7AA334F1	TRANSFORMER FLAYBACK	⚠
		OTHERS	
TNR001	ENG36620G	TUNER	⚠
TNR8000	ENGE6111D	TUNER	⚠
M001	TSX2AA0381	A/C LINE CORD	⚠
M002	TXF3A01ECV	DAG GND	
1	TXFCRT31GSER	BLUE CRT PT-53TWD63G	
	TXFCRT32GSER	GREEN CRT PT-53TWD63G	
	TXFCRT33GSER	RED CRT PT-53TWD63G	
	TXFCRT34GSER	BLUE CRT PT-56 TWD63G	
	TXFCRT35GSER	GREEN CRT PT-56TWD63G	
	TXFCRT36GSER	RED CRT PT-56TWD63G	
M003	K3B10CA00006	CRT SOCKET	⚠
2	KDY2ASF83F	DEFLECTION YOKE	⚠
3	TKG2AF029	A/B LENS	
4	TKG2AA50121	MIRROR GLASS PT-53TWD63G	
	TKG2AA50131	MIRROR GLASS PT-56TWD63G	
5	TMW2AX0041B	MIRROR BRACKET (SIDE)	
6	TMW2AX0161	MIRROR BRACKET (TOP)	
7	TKG2AH50641	LENTICULAR PROTECTIVE SCREEN PT-53TWD63G	
	TKG2AH50651	LENTICULAR PROTECTIVE SCREEN PT-56TWD63G	
8	TKG2AH50631	FRESNEL SCREEN PT-53TWD63G	
	TKG2AH50661	FRESNEL SCREEN PT-56TWD63G	
9	TKZ2A06011	SCREEN BRACKET PT-56TWD63G	
	TKZ2AM50041C	SCREEN BRACKET PT-56TWD63G	
	TKZ2AM50181	SCREEN BRACKET PT-53TWD63G	
10	TKY2AA3902S	FRONT CABINET PT-53TWD63G	
	TKY2AA4401S	FRONT CABINET PT-56TWD63G	
11	TKB2AA0231S	WOOD CABINET PT-53TWD63G	
	TKB2AA0241S	WOOD CABINET PT-56TWD63G	

Ref. No.	Part No.	Part Name & Description	Remarks
12	TKU2AA03601	BACK BOTTOM COVER(LOWER BACK CABINET) PT-53TWD63G	
	TKU2AA03801	BACK BOTTOM COVER(LOWER BACK CABINET) PT-56TWD63G	
13	TKU2AA04001	MIDDLE BACK COVER PT-53TWD63G	
	TKU2AA04101	MIDDLE BACK COVER PT-56TWD63G	
14	TKU2AC3101S	BACK CABINET PT-53TWD63G	
	TKU2AC3601S	BACK CABINET PT-56TWD63G	
M004	TBL2AH30071	CASTER	
15	TKD2AX3121S	INNER BARRIER BOARD	
16	EASG5PH508A2	SPEAKER (TWEETER)	
17	EASG8P533A2	SPEAKER (MIDRANGE)	
18	EASG16P559A2	SPEAKER (WOOFER)	
19	TKP2AA0792S	SPEAKER GRILLE PT-53TWD63G	
	TKP2AA0872S	SPEAKER GRILLE PT-56TWD63G	
20	KFT7CP336F	DISTRIBUTOR	⚠
21	D9ZZ00000079	FOCUS PACK	⚠
22	UDQFSEH58F	FAN	
23	TXFKP20GSER	REAR BRACKET	
24	TKD2AX3131S	FRONT BOARD	
25	TXFKP21GSER	FRONT PANEL PT-53TWD63G	
	TXFKP23GSER	FRONT PANEL PT-56TWD63G	
26	TXFKP22GSER	A/V POCKET	
27	TKP2AA0992S	FRONT DOOR	
28	TEK6935	LATCH	
29	TBX2AA2701	7-KEY BUTTON	
30	TKP2AA0801	LED PANEL	
M005	TMM2AE10171	GROMMET SQUARE	
JG1	K1NA68B00035	JG-BOARD CONNECTOR	
JG2	K1NA12B00002	JG-BOARD CONNECTOR	
JK1001	TJB2AA0481	FRONT A/V TERMINAL	
JK3001	TJB2AA0251	REAR A/V TERMINAL 12-PIN	
JK3002	TJB2AA0241	REAR A/V TERMINAL 10-PIN	
JK5001	K1FA119E0001	HDMI CONNECTOR	
JK5002	TJB2AA0411	AUDIO IN TERMINAL 2 PIN	
JK8002	K1NA68B00036	POD CONNECTOR	
JK8003	K1NA12E00001	SD SERVICE CARD CONNECTOR	
		OTHER ACCESSORIES	
M006	TQB2AA0474	OWNERS MANUAL	
M007	EUR7627Z10	TRANSMITTER REMOTE CTRL	
M008	UR76EC2703A	BATTERY COVER REMOTE CTRL	

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Service Manual

HDTV MONITOR

PT-47WXD63G
PT-53WXD63G

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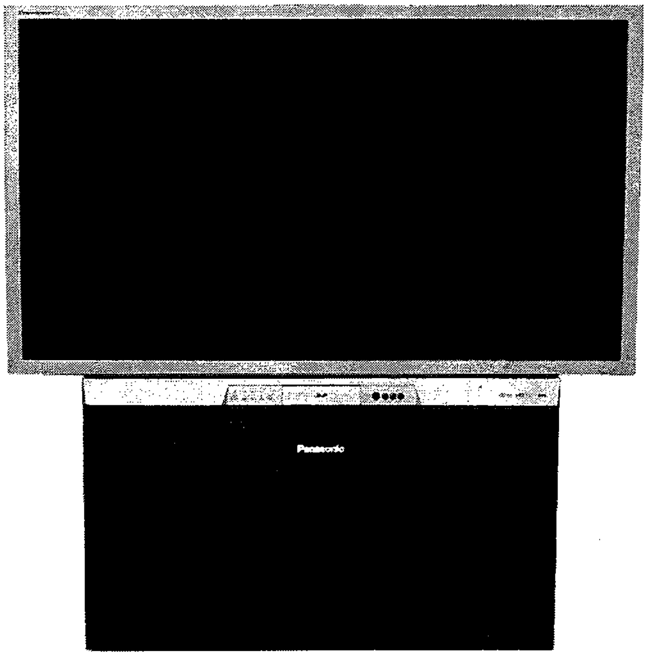

⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are marked by ⚠ in the Schematic Diagrams, Circuit Board Diagrams, Exploded Views and Replacement Parts List. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire or other hazards. Do not modify the original design without permission of manufacturer.

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1 Safety precautions

General guidelines

An isolation transformer should always be used during the servicing of a receiver whose chassis is not isolated from AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resulting in personal injury from electrical shocks. It will also protect the receiver from being damaged by accidental shorting that may occur during servicing.

When servicing, observe the original lead dress, especially in the high voltage circuit. Replace all damaged parts (also parts that show signs of overheating.)

Always replace protective devices, such as fish paper, isolation resistors and capacitors, and shields after servicing the receiver. Use only manufacturer's recommended rating for fuses, circuits breakers, etc.

High potentials are present when this receiver is operating. Operation of the receiver without the rear cover introduces danger for electrical shock. Servicing should not be performed by anyone who is not thoroughly familiar with the necessary precautions when servicing high voltage equipment.

Extreme care should be practiced when handling the picture tube. Rough handling may cause it to implode due to atmospheric pressure. (14.7 lbs per sq. in.). Do not nick or scratch the glass or subject it to any undue pressure. When handling, use safety goggles and heavy gloves for protection. Discharge the picture tube by shorting the anode to chassis ground (not to the cabinet or to other mounting hardware). When discharging connect cold ground (i.e. dag ground lead) to the anode with a well insulated wire or use a grounding probe.Avoid prolonged exposure at close range to unshielded areas of the picture tube to prevent exposure to x ray radiation.

The test picture tube used for servicing the chassis at the bench should incorporate safety glass and magnetic shielding. The safety glass provide shielding for the tube viewing area against x ray radiation as well as implosion. The magnetic shield limits the x ray radiation around the bell of the picture tube in addition to the restricting magnetic effects. When using a picture tube test jig for service, ensure that the jig is capable of handling 50kV without causing x ray radiation.

Before returning a serviced receiver to the owner, the service technician must thoroughly test the unit to ensure that is completely safe to operate. Do not use a line isolation transformer when testing.

Leakage current cold check

Unplug the A.C. cord and connect a jumper between the two plug prongs.Measure the resistance between the jumpered AC plug and expose metallic parts such as screwheads, antenna terminals, control shafts, etc. If the exposed metallic part has a return path to the chassis, the reading should be between 240kΩ and 5.2MΩ. If the exposed metallic part does not have a return path to the chassis, the reading should be infinite.

Leakage current hot check

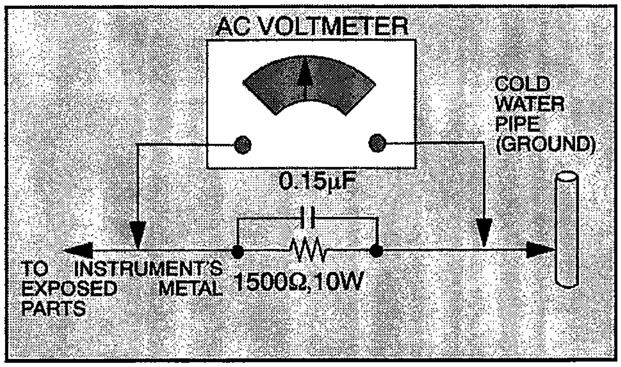
Plug the AC cord directly into the AC outlet. Do not use an isolation transformer during the check.

Connect a 1.5kΩ 10 watt resistor in parallel with a 0.15μF capacitor between an exposed metallic part and ground. Use earth ground, for example a water pipe.

Using a DVM with a 1000 ohms/volt sensitivity or higher, measure the AC potential across the resistor.

Repeat the procedure and measure the voltage present with all other exposed metallic parts.

Verify that any potential does not exceed 0.75 volt RMS. A leakage current tester (such a Simpson model 229, Sencore model PR57 or equivalent) may be used in the above procedure, in which case any current measure must not exceed 0.5 milliampere. If any measurement is out of the specified limits, there is a possibility of a shock hazard and the receiver must be repaired and rechecked before it is returned to the customer.



Hot check circuit

Insulation test

Connect an insulation tester between an exposed metallic part and A.C. line. Apply 1080VAC/60Hz for 1 second. Confirm that the current measurement is 0.5mA ~ 2.0mA. Repeat test with other metallic exposed parts.

X-ray radiation

WARNING

The potential source of x-ray radiation in the PTV set is in the high voltage section and the picture tube.

NOTE

It is important to use an accurate, calibrated high voltage meter.

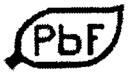
Apply all black video signals (1080i) and confirm high voltage measures 31.5 ± 1.0kV. If the high voltage is not within the range, change C514 (in D-Board) to 1800pF, 2000pF, 2400pF or 2700pF until the desired value is obtained.Apply NTSC white pattern and confirm the high voltage measures 30.1 ± 1.5kV. Apply HD 1080i white pattern and confirm the high voltage measures 30.1 ± 1.5kV.

2 About lead free solder (PbF)

NOTE

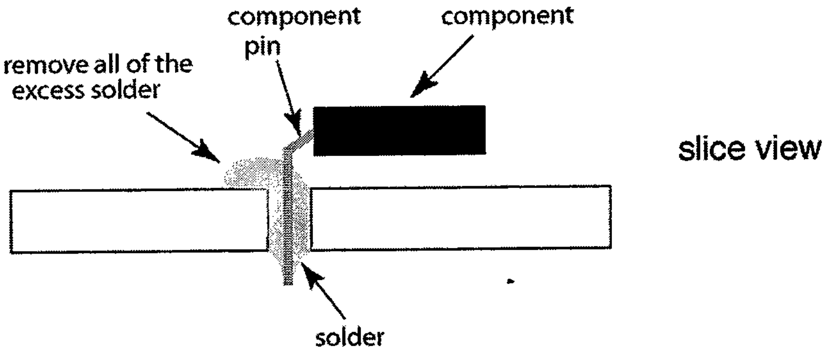
Lead is listed as (Pb) in the periodic table of elements.
In the information below, Pb will refer to lead solder, and PbF will refer to Lead Free Solder.
The lead free solder used in our manufacturing process and discussed below is (Sn+Ag+Cu).
That is Tin (Sn), Silver (Ag) and Copper (Cu) although other types are available.

This model uses Pb Free solder in it's manufacture due to environmental conservation issues. For service and repair work, we'd suggest the use of Pb free solder as well, although Pb solder may be used.
PCBs manufactured using lead free solder will have the "PbF" or a leaf symbol stamped on the back of PCB.



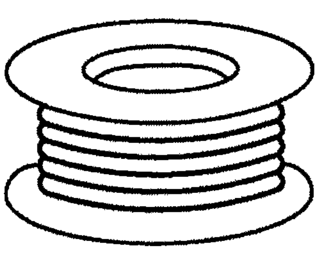
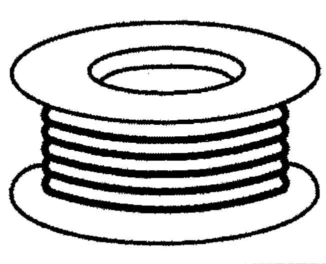
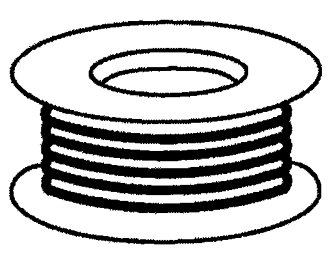
CAUTION

- Pb free solder has a higher melting point than standard solder. Typically the melting point is 50 ~ 70 °F (30 ~ 40 °C) higher. Please use a high temperature soldering iron and set it to 700 ± 20 °F (370 ± 10 °C).
- Pb free solder will tend to splash when heated too high (about 1100 °F or 600 °C).
  If you must use Pb solder, please completely remove all of the Pb free solder on the pins or solder area before applying Pb solder. If this is not practical, be sure to heat the Pb free solder until it melts, before applying Pb solder.
- After applying PbF solder to double layered boards, please check the component side for excess solder which may flow onto the opposite side.



Suggested Pb free solder

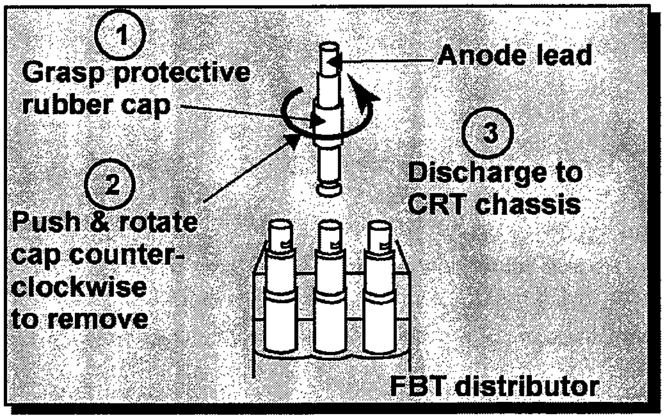
There are several kinds of Pb free solder available for purchase. This product uses Sn+Ag+Cu (tin, silver, copper) solder. However, Sn+Cu (tin, copper), Sn+Zn+Bi (tin, zinc, bismuth) solder can also be used.

0.3mm X 100g	0.6mm X 100g	1.0mm X 100g
		

3 Important safety tests

Measuring H.V.

The anode caps are cemented to the CRTs. To gain access for high voltage measurement, remove the red CRT's anode lead from the flyback transformer distributor. Grasp the anode lead protective cap at its bottom and squeeze it against the locking cap body inside, rotate 1/4 turn counter clockwise and pull the anode lead sleeve out of the FBT distributor. Connect a high voltage positive lead from your H.V. meter to the FBT distributor, and the common negative lead to cold ground


①
Grasp protective rubber cap
Anode lead
③
Discharge to CRT chassis
②
Push & rotate cap counter-clockwise to remove
FBT distributor

FBT leads removal

Note:

Reinsert the anode lead into the FBT distributor until it is tightly and fully seated. Turn the locking cap clockwise to lock in place.

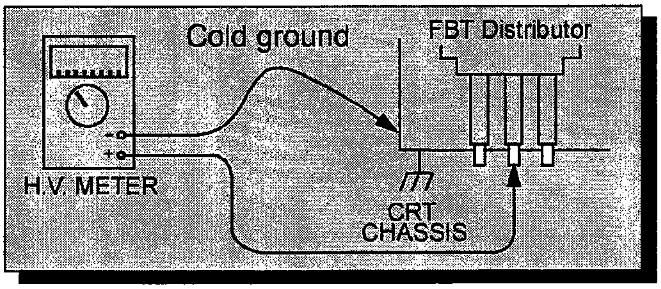
(EHT) Protector operation check

With the cabinet back removed, apply a nominal 120V A.C. to the PTV.

Over voltage test

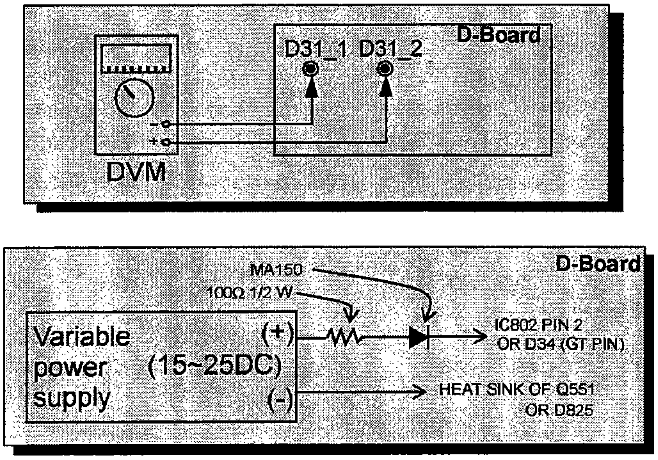
Preparation:

1. Turn PTV "OFF"
2. Connect a NTSC signal generator to the antenna terminal.
3. Connect DVM positive lead to D31 pin 2 and negative lead to D31 pin 1 on D-Board


Cold ground
FBT Distributor
-
+
H.V METER
CRT CHASSIS

H.V. measurement

4. Connect a H.V. meter (static type, class 0.1) with high voltage leads to high voltage distributor on FBT.


D31_1 D31_2
D-Board
-
+
DVM
MA150
100Ω 1/2 W
D-Board
Variable power supply
(+)
(15~25DC)
(-)
IC802 PIN 2 OR D34 (GT PIN)
HEAT SINK OF Q551 OR D825

DVM and power supply connection

5. Connect the 15 ~ 25 V DC variable power supply positive lead to D34 or IC802 pin 2 (D Board) and negative lead to heat sink of Q551 or D825

Procedures:

1. Apply a NTSC white pattern.
2. Turn PTV ON.
3. Adjust the picture or brightness controls so that the DVM reads 12.4 ± 0.4 volts.
4. Increase the variable power supply until set turns off. The set should turn off at 12.4 ± 0.4 volts (DVM) and high voltage less than 36.4kV.
5. If the DVM reading is other than 12.4 ± 0.4 volts, readjust picture or brightness control and repeat steps 3.
6. Turn off the variable supply and confirm that the set will turn on by pulling out AC plug socket and connecting it again.

4 Service notes

NOTE

These components are affixed with glue. Be careful not to break or damage any foil under the component or at the pins of the ICs when removing. Usually applying heat to the component for a short time while twisting with tweezers will break the component loose.

Leadless chip component (surface mount)

Chip components must be replaced with identical chips due to critical foil track spacing. There are no holes in the board to mount standard transistors or diodes. Some chips capacitor or resistor board solder pads may have holes through the board, however the hole diameter limits standard resistor replacement to 1/8 watt. Standard capacitor may also be limited for the same reason. It is recommended that identical components be used.

Chip resistor have a three digit numerical resistance code, 1st and 2nd significant digits and a multiplier. Example: 162 = 1600 or 1.6kΩ resistor, 0 = 0Ω (jumper).

Chip capacitors generally do not have the value indicated on the capacitor. The color of the component indicates the general range of the capacitance.

Chip transistors are identified by a two letter code. The first letter indicates the type and the second letter, the grade of transistor.

Chip diodes have a two letter identification code as per the code chart and are a dual diode pack with either common anode or common cathode. Check the parts list for correct diode number.

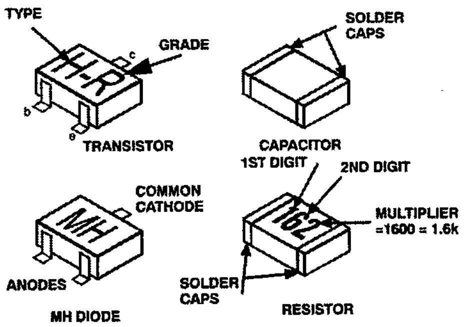
Component removal

1. Use solder wick to remove solder from component end caps or terminal.
2. Without pulling up, carefully twist the component with tweezers to break the adhesive.
3. Do not reuse removed leadless or chip components since they are subject to stress fracture during removal.

Chip component installation

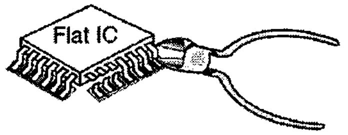
1. Put a small amount of solder on the board soldering pads.
2. Hold the chip component against the soldering pads with tweezers or with a miniature alligator clip and apply heat to the pad area with a 30 watt iron until solder flows. Do not apply heat for more than 3 seconds.

Chip components

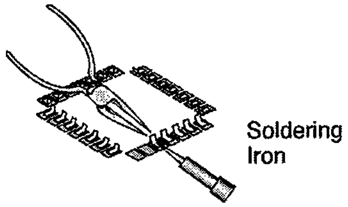


How to replace flat ic (required tools)

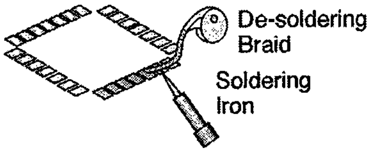
1. Remove the solder from all of the pins of a Flat IC by using a desolder braid



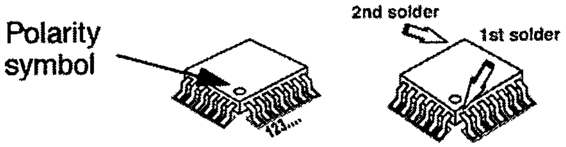
2. Put the iron wire under the pins of the Flat IC and pull it in the direction indicated while heating the pins using a soldering iron. A small awl can be used instead of the iron wire.



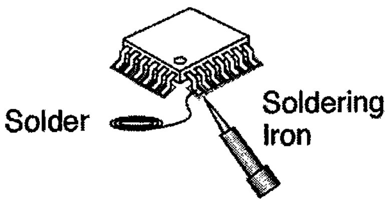
3. Remove the solder from all the pads of the Flat IC by using a de solder braid



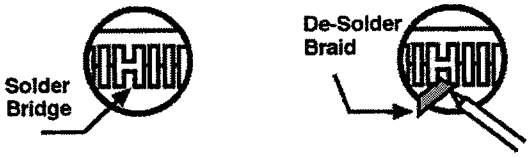
4. Position the new Flat IC in place (apply the pins of the Flat IC to the soldering pads where the pins need to be soldered). Properly determine the positions of the soldering pads and pins by correctly aligning the polarity symbol



5. Solder all pins to the soldering pads using a fine tipped soldering iron



6. Check with a magnifier for solder bridge between the pins or for dry joint between pins and soldering pads. To remove a solder bridge, use a de solder braid as shown in the figure below



IMPORTANT

To protect against possible damage to the solid state devices due to arcing or static discharge, make certain that all ground wires are securely connected

CAUTION

The power supply circuit is above earth ground and the chassis cannot be polarized. Use an isolation transformer when servicing the receiver to avoid damage to the test equipment or to the chassis. Connect the test equipment to the proper ground (HOT or COLD) when servicing, or incorrect voltages will be measured.

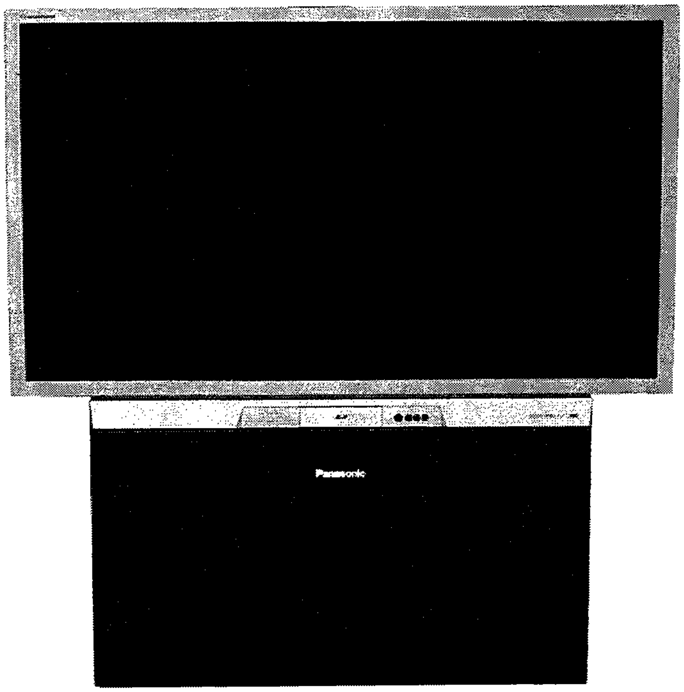
WARNING

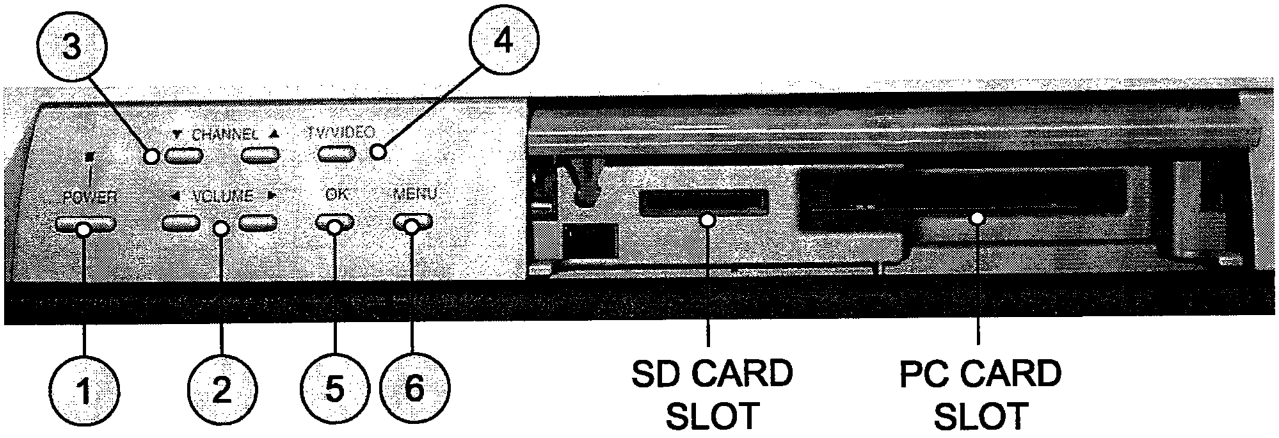
This receiver has been designed to meet or exceed applicable safety and x-ray radiation protection as specified by government agencies and independent testing laboratories.

To maintain original product safety design standards relative to x-ray radiation and shock and fire hazard, parts indicated with the symbol ⚠ on the schematic must be replaced with identical parts. Order parts from the manufacturer's parts center using the parts numbers shown in this service manual, or provide the chassis number and the part reference number.

For optimum performance and reliability, all other parts should be replaced with components of identical specification.

5 PTV Location of controls




3
4
▼ CHANNEL ▲
TV/VIDEO
POWER
◄ VOLUME ►
OK
MENU
1
2
5
6
SD CARD SLOT
PC CARD SLOT

QUICK REFERENCE BUTTON OPERATION

① **POWER** - Press to turn ON or OFF.

② **VOLUME** - Press to adjust sound level, settings and features on menu.

③ **CHANNEL** - Press to select programmed channels. Press to highlight desired features when menus are displayed.

④ **TV/VIDEO** - Press to select TV or one of the video inputs.

⑤ **OK** - Press to choose menu and sub-menu entry.

⑥ **MENU** - Press to display main menu or return one step backward in menus.

6 Receiver feature table

FEATURE/MODEL	PT-47WXD63G PT-53WXD63G
CHASSIS	AP830
MICRO	256K
MENU LANGUAGE	ENGLISH
CLOSED CAPTION	X
V-CHIP (USA/CANADA)	X
CHANNEL INFO BANNER	X
ATSC / QAM TUNING	X
VIDEO INPUT SKIP	SKIP
CHANNEL COUNT	181
PIP (1T), 2T PIP (2T), 2T SPLIT	2T SPLIT
2RF	X
REMOTE CONTROL (W/LIGHT)	EUR7627Z10
CRT SUPPLIER	MDDA (CENTAUR)
SCREEN	W/PROT SCREEN
CHASSIS	P9
COMB FILTER	MOTION ADP, 3D Y/C
HEC/VEC (X=BOTH)	X
NEW YNR	X
VM	X (DIGITAL)
V/A NORM (X=BOTH)	X
COLOR TEMP	X
AIP	X
PRESET/INPUT LABELING	X
VIDEO PICTURE MEMORY	X
DIGITAL SCAN RATE	1080i, 540p
NTSC LINE DOUBLER	540p PROGRESSIVE (NEW)
MTS/SAP/DBX	X
BUILT-IN AUDIO POWER	15Wx2 (10%)
No. OF SPEAKERS	4
BASS/BALANCE/TREBLE CONTROL	X
AI SOUND	X
SURROUND	X
SPATIALIZER/BBE	BBE
A/V IN (REAR/FRONT)	4(3/1)
A/V PROGRAM OUT	X
AUDIO OUT (FAO: F, VAO:V)	F
COMPONENT INPUT (Y, Pb, Pr)	2
S-VIDEO INPUT (REAR/FRONT)	2/1
HDMI/HDCP INPUT	1
DIGITAL AUDIO OUT (AC-3/PCM)	1
CableCARD SLOT	1(BACK)
(PCMCIA/SD)	1(FRONT)

Note:

Specifications are subject to change without notice or obligation.

7 Board description table

BOARD	PART NUMBER	DESCRIPTION
A-BOARD	TNP2AH051	MAIN CHASSIS
D-BOARD	TNP2AH056	POWER SUPPLY
* DC-BOARD	TNP2AA151	CONVERGENCE CIRCUIT
* DG-BOARD	TNP2AA132	MPU, VIDEO SIGNAL PROCESSING
* DV-BOARD	TNP2AA133	HDMI DECODER
* DT-BOARD	TNP2AA144	HIGH DEFINITION TUNER
G-BOARD	TNP2AA150	FRONT A/V INPUT
H-BOARD	TNP2AA134	REAR A/V INPUTS
K-BOARD	TNP2AA149	KEYBOARD PANEL
* JG-BOARD	TNP2AA140	SD,PC JPEG VIEWER
LB-BOARD	TNP2AA147AB	BLUE PRT
LG-BOARD	TNP2AA146AB	GREEN PRT
LR-BOARD	TNP2AA145AB	RED PRT
R-BOARD	TNPA0615AB	IR SENSOR
T-BOARD	TNP2AA136	SUB-POWER

NOTE

When ordering a replacement board assembly, append an “S” to the board number

EXAMPLE

To order the A Board, the replacement board is TNP2AH051S

*

DC-Board, DG-Board, DV-Board, DT-Board and JG-Board are non-serviceable boards, except for the connectors JG1, JG2, JK5001, JK5002, JK8002 and JK8003. If any of these boards are defective, replace it with a new one.

8 Location of controls (EUR7627Z10 remote)

POWER

Press to turn ON and OFF.

TV - VCR - DVD - DBS - RCVR

Press to select a component.

TV/VIDEO

Press to select TV or Video mode.

SD

Press to acces the JPEG viewer menu.

MUTE

Press to mute sound.

ASPECT

Press to change the aspect ratio of image.

MENU

Press to acces the menu.

KEYBOARD

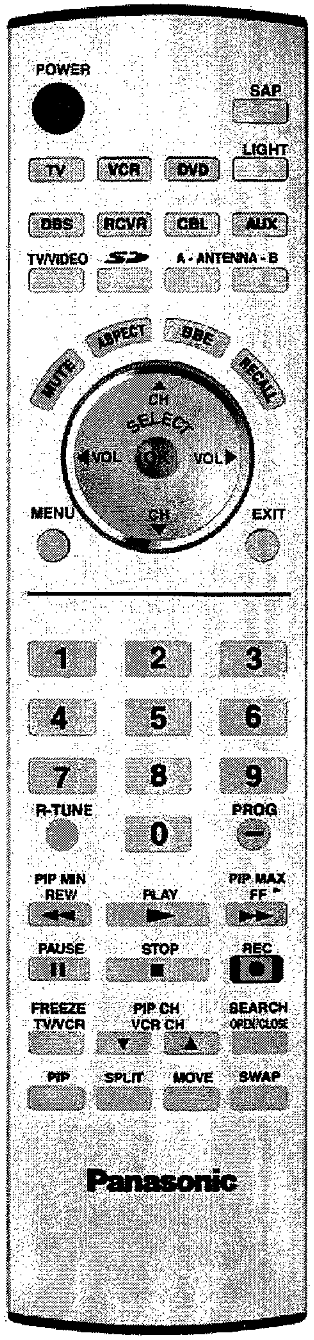
Press to select any channel.

R-TUNE

Press to switch to previously viewed channel or video mode.

COMPONENT - PIP - SEARCH

Press to control the component functions. Press to access the PIP and search functions.


POWER
SAP
LIGHT
TV
VCR
DVD
DBS
RCVR
CBL
AUX
TV/VIDEO
A - ANTENNA - B
ASPECT
BBE
MUTE
RECALL
CH
SELECT
VOL
OK
VOL
CH
MENU
EXIT
1
2
3
4
5
6
7
8
9
R-TUNE
PROG
0
PIP MIN
REW
PLAY
PIP MAX
FF
PAUSE
STOP
REC
FREEZE
TV/VCR
PIP CH
VCR CH
SEARCH
OPEN/CLOSE
PIP
SPLIT
MOVE
SWAP
Panasonic

SAP

Press to acces the secondary audio program broadcast.

LIGHT

Press to iluminate the keypad.

A & B ANTENNA

Press to select between antenna A or B inputs.

RECALL

Press to display time, channel sleep timer and other options.

BBE

Press to turn BBE sound ON or OFF.

OK

Press to select an adjustment or option.

VOL

Press to adjust TV sound and navigate in menus.

CH

Press to select next or previous channel and navigate in menus.

EXIT

Press to exit adjustments or menus.

Note:

For additional information for this remote please refer to the owner's manual section remote operation, listed on the parts list section.

9 Auto diagnosis feature

This receiver incorporates a self diagnosis feature. With this feature it will be easier for the technician to detect failures. There is a LED located by the keyboard on the front panel, this LED will start flashing when SOS is detected by the circuits located in specific areas, depending on how many times the LED is flashing, this will indicate what circuit should be checked. Make a count of flashing and see the table shown below. Please use this feature effectively especially for intermittent problems.

NUMBER OF FLASHES	POSSIBLE CAUSE
1	POWER SUPPLY AND/OR VERTICAL
2	IC1006 (DG-BOARD)
3	CONVERGENCE (DC-BOARD)
4	HHS (FLYBACK)
5	GC2M (DG-BOARD)
6	GC2S (DG-BOARD)
7	GC2V (DG-BOARD)
8	FAN

10 EEPROM copy jig

This PTV has a feature that allows to clone convergence from main EEPROM data adjustments from a PTV to other by connecting a jig to the PTV set, or can be used to back-up data before making adjustments. A jig part number TXFJIG01SER, is available through Matsushita/Panasonic Services.

Preparation:

To connect this jig, remove the lower back cover as instructed on disassembly for service section on this service manual and insert the jig into A10 connector located on A-Board. (See figure)

Procedure to copy data:

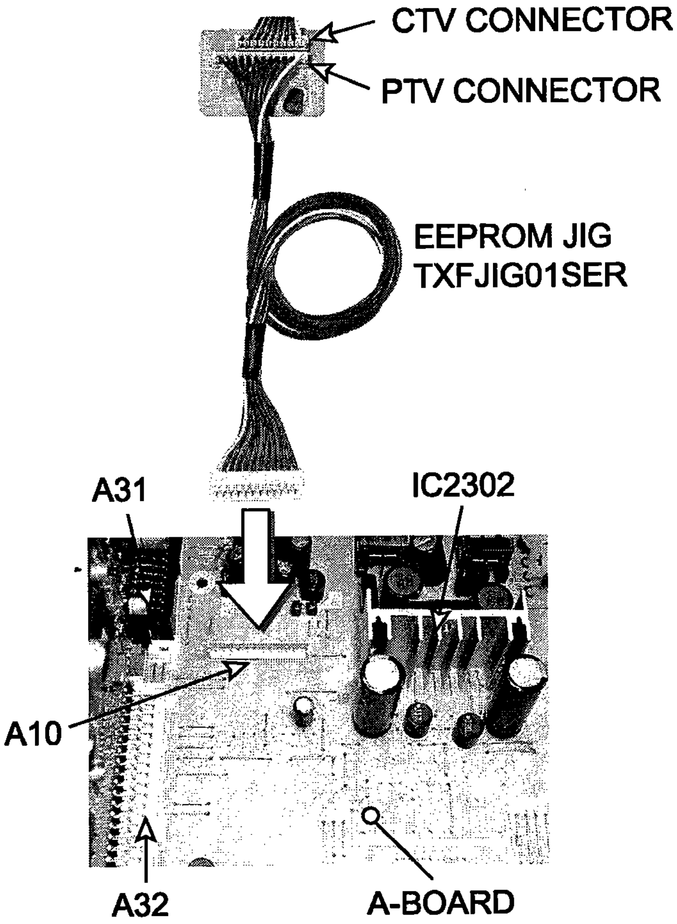
1. Enter to service mode and display service menu (see page 23).
2. Select "AREA" DAC and then press OK button on remote to enter. Press VOL right/left to select one of the following options then press OK:
   - Select ALL to copy all main EEPROM data
   - Select ADJ to copy only adjustment data.
   - Select FIX to copy only fix data
3. To copy data from main EEPROM to jig, select "IN→EX" DAC and press OK button on remote.
4. To copy data from jig to main EEPROM, select "EX→IN" DAC and press OK button on remote.

Procedure to copy convergence:

1. Enter to service mode and display service menu
2. Select "FINE" DAC and press OK on remote.
3. Press "8" on remote.
4. Select from and then press OK on remote:
   - INT to copy data from internal EEPROM to jig
   - EXT to copy from jig to internal EEPROM.
5. Select an option from the menu with CH keys and confirm with OK:
   - DEFAULT:default factory preset
   - CURRENT:to copy the current (receiver data or jig data) convergence adjustments to memory.
   - NOT USE: to back up data.
   - ALL: to copy all data.

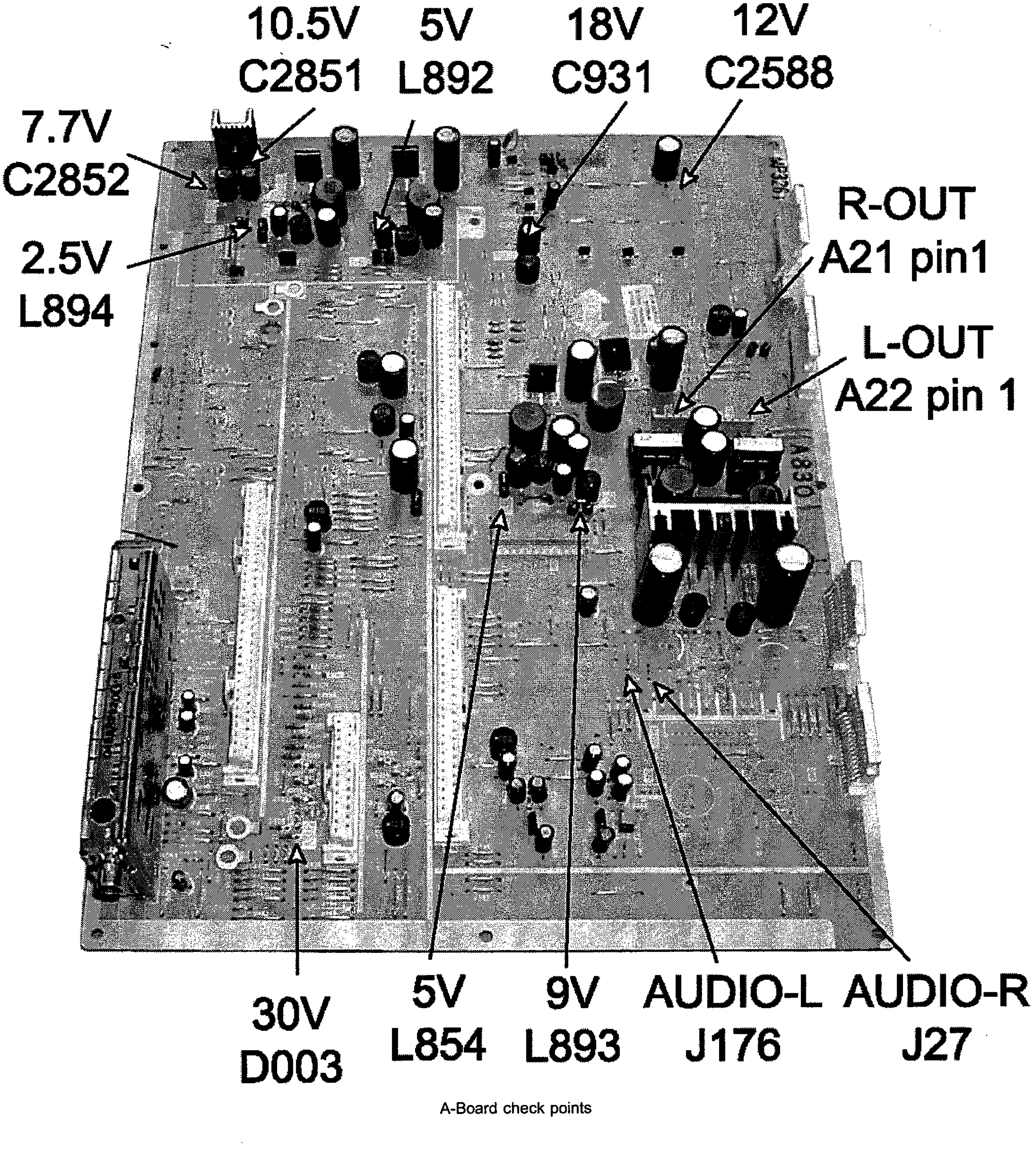
   NOTE:

   The stated as default factory preset contain the factory DATA; Use this option when data was lost or when adjustment is lost completely.
6. Select destination to copy (INT or EXT) and confirm with OK.
7. Once an option is selected the copy process begins.
8. Once finished, the receiver shuts down for a moment to reinitialize.
9. Remove the copy jig from A10.



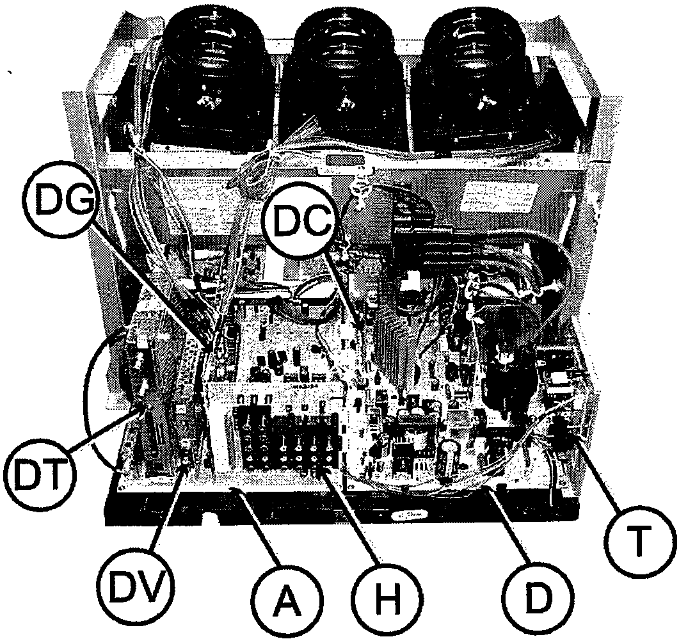
EEPROM copy jig connection

11 A-Board check points

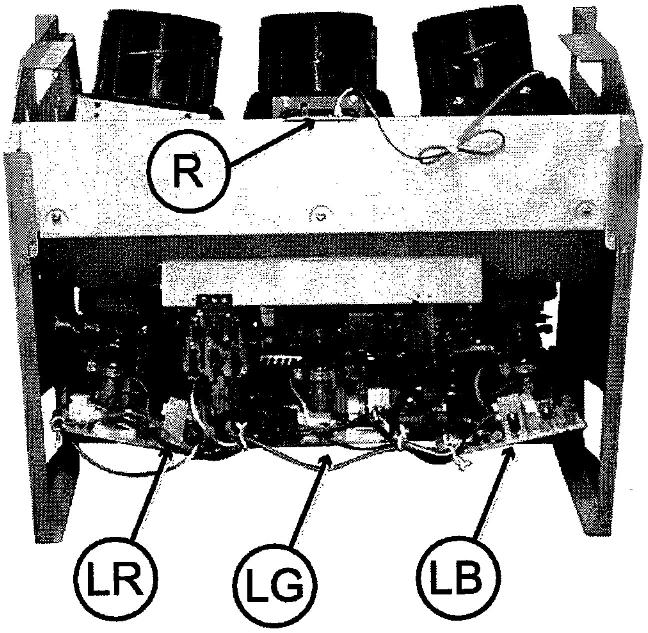

10.5V
C2851
5V
L892
18V
C931
12V
C2588
7.7V
C2852
2.5V
L894
R-OUT
A21 pin1
L-OUT
A22 pin 1
30V
D003
5V
L854
9V
L893
AUDIO-L
J176
AUDIO-R
J27

A-Board check points

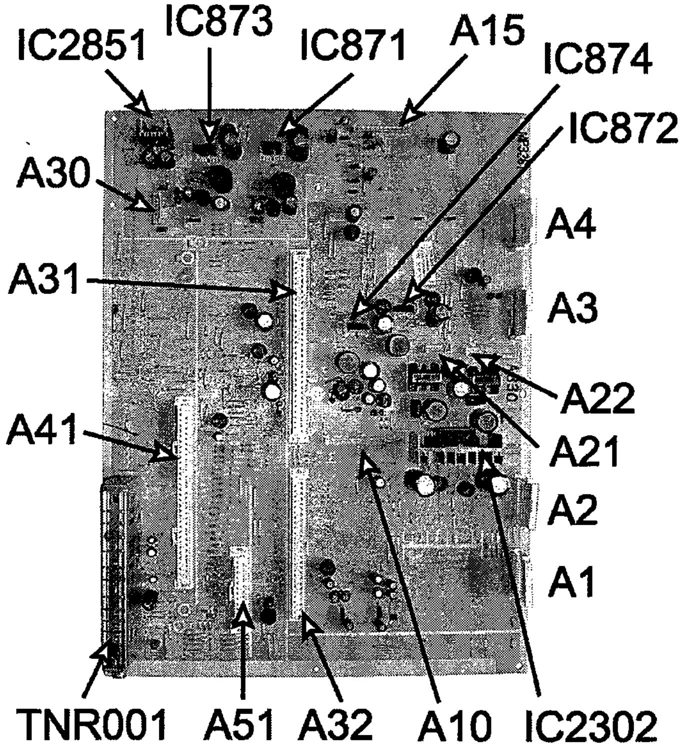
12 Chassis & boards layout (location of main components)


DG
DC
DT
T
DV
A
H
D

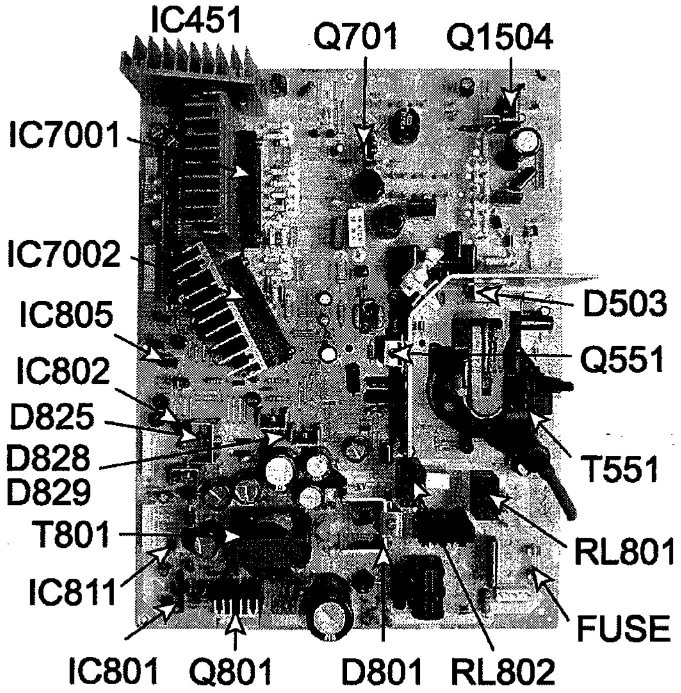
Chassis and boards layout



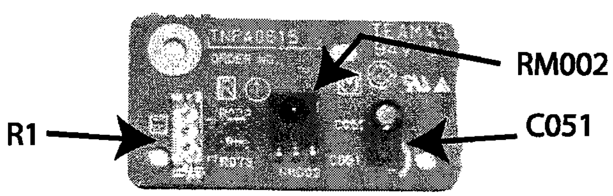
Chassis and boards (FRONT)


IC2851
IC873
IC871
A15
IC874
IC872
A30
A4
A31
A3
A22
A41
A21
A2
A1
TNR001
A51
A32
A10
IC2302

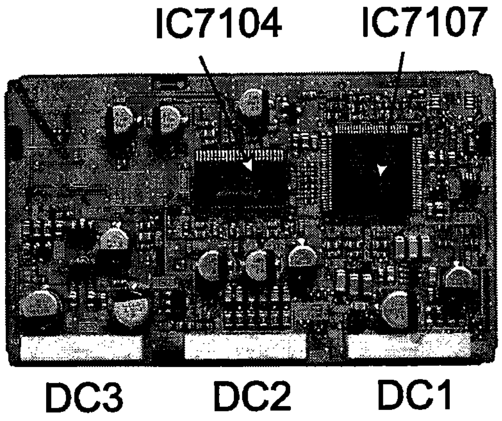
A-BOARD


IC451
Q701
Q1504
IC7001
IC7002
D503
IC805
Q551
IC802
D825
D828
D829
T551
T801
RL801
IC811
FUSE
IC801
Q801
D801
RL802

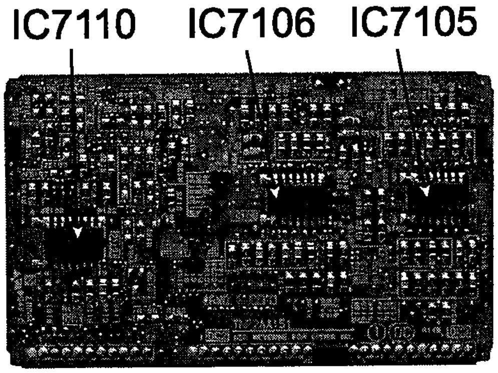
D-BOARD


RM002
R1
C051

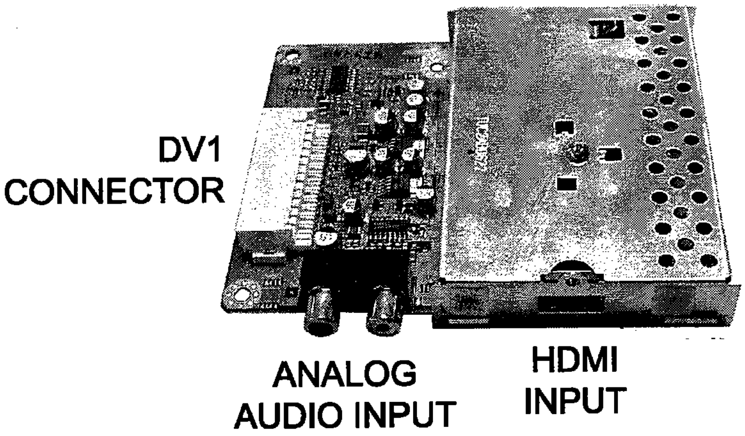
R-BOARD


IC7104
IC7107
DC3
DC2
DC1

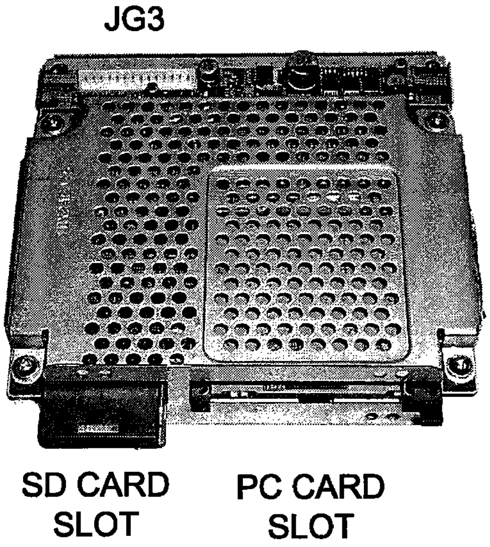
DC-BOARD (TOP)


IC7110
IC7106
IC7105

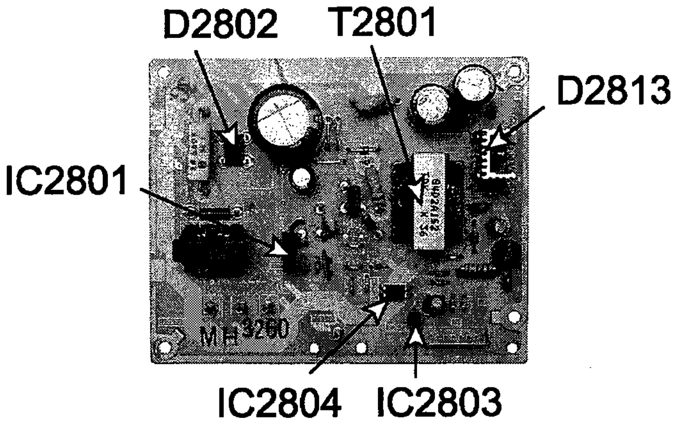
DC-BOARD (BOTTOM)


DV1
CONNECTOR
ANALOG
AUDIO INPUT
HDMI
INPUT

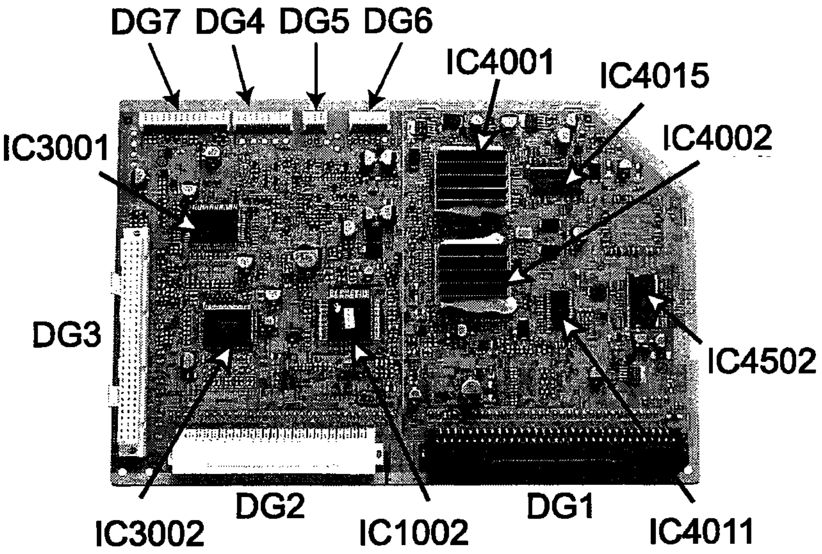
DV-BOARD


JG3
SD CARD SLOT
PC CARD SLOT

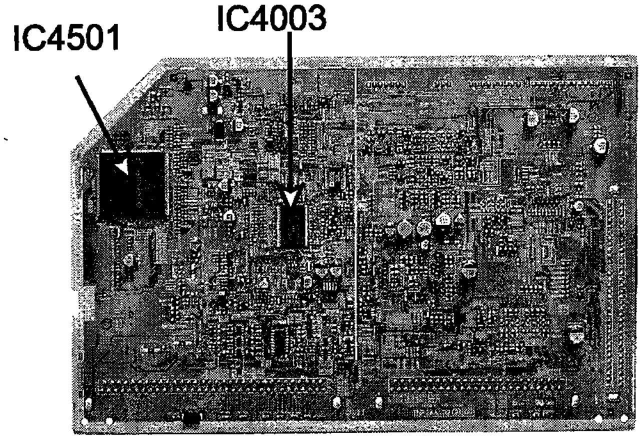
JG-BOARD


D2802
T2801
D2813
IC2801
IC2804
IC2803

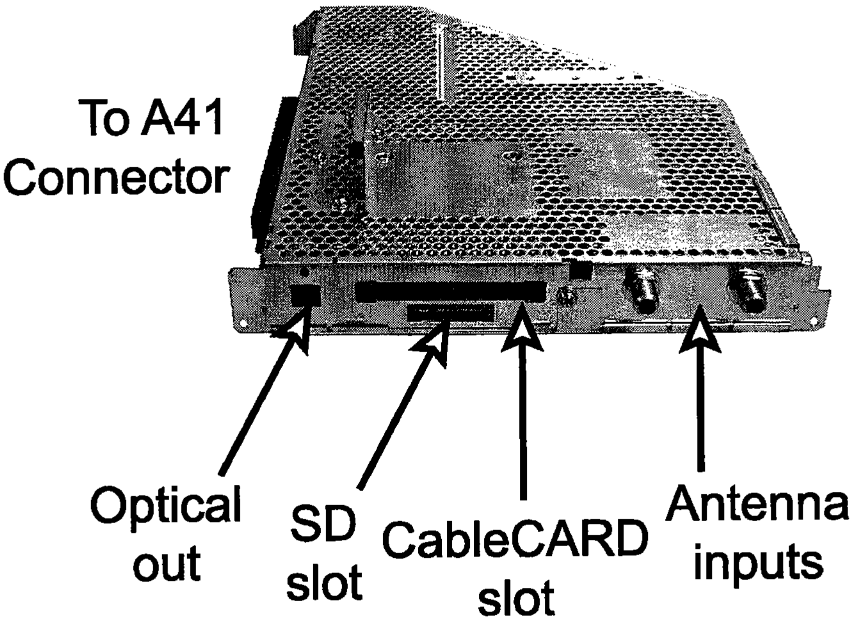
T-BOARD


DG7
DG4
DG5
DG6
IC4001
IC4015
IC3001
IC4002
DG3
IC4502
DG2
DG1
IC3002
IC1002
IC4011

DG-BOARD (TOP)


IC4501
IC4003

DG-BOARD (BOTTOM)


To A41 Connector
Optical out
SD slot
CableCARD slot
Antenna inputs

DT-BOARD

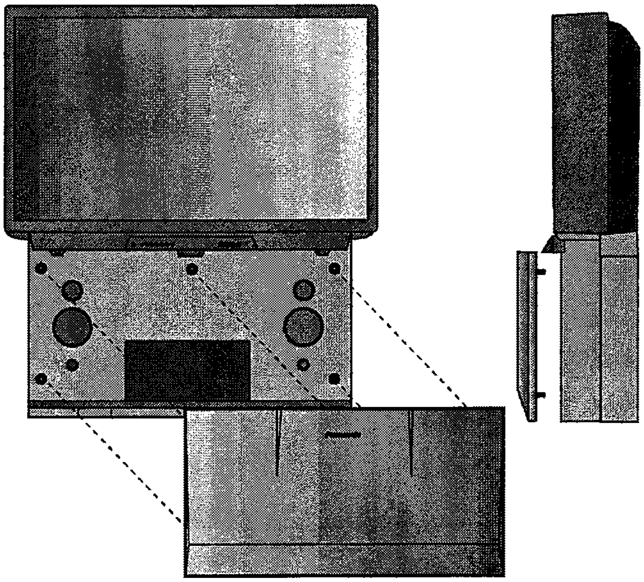
13 Disassembly for service

NOTE:

Board ground wires may have to be disconnected to disassemble some boards. All ground wires must be reconnected using jumper leads, if necessary, before power is applied to PTV for service.

Speaker grille removal

Speaker grille, is secured to the cabinet of the PTV with 5 grommet holders. Grip panel from the sides and middle upper part, and gently pull forward to remove. When reassembling, make certain to firmly press on the panel where the insertion points (5) are located, one at each corner and one at the middle top edge.



Speaker grille removal

Keyboard, JPEG viewer and front A/V inputs removal

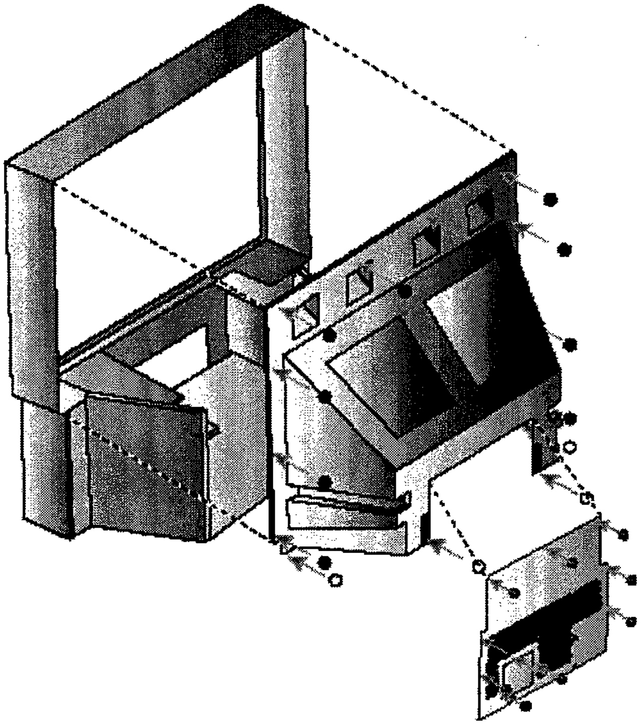
1. Remove the speaker grille.
2. Unplug the connectors from the keyboard and front A/V inputs assemblies. Remove the screws (3) affixing the keyboard and front A/V inputs to the control panel and tilt the front panel assembly upward and release it from the front cabinet carefully and disconnect the JPEG viewer connector.

Speakers replacement

1. Remove the speaker grille.
2. Each speaker is secured to the cabinet with 2 screws (Top speaker) and 4 screws (Bottom speaker).
3. Disconnect the R and L speaker lead connectors from the speaker units.

Back lower cover removal

1. Remove (7) hex screws around the perimeter, marked with arrows. See figure for screws location.
2. Remove (9) screws from around the A/V terminal board (marked with arrows).



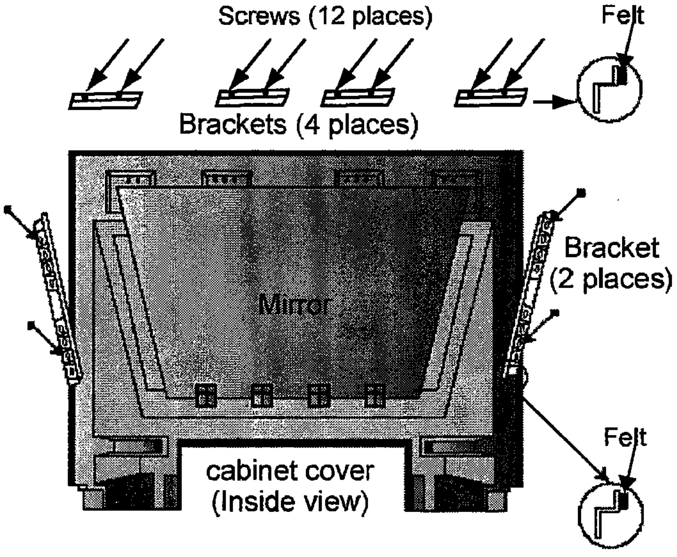
Back lower cabinet removal

Back cabinet removal

1. Remove the back lower cover. (Detailed previously).
2. The top back cover (plastic shell) is secured with (14) screws around its perimeter. See figure for screws location.
3. Be careful not to damage the mirror secured to the underside of the back cover.

Mirror removal

The mirror is attached inside the cabinet cover. Carefully remove the cabinet cover to access its interior surface and remove the screws securing the brackets that hold the mirror at the top and sides to the mirror.



Mirror removal

Screen frame removal

1. Remove the speaker grille. Disconnect the cables

leading to the keyboard, JPEG viewer and the A/V panels and remove the keyboard and AV panel assembly. The assembly is secured by three (3) screws.

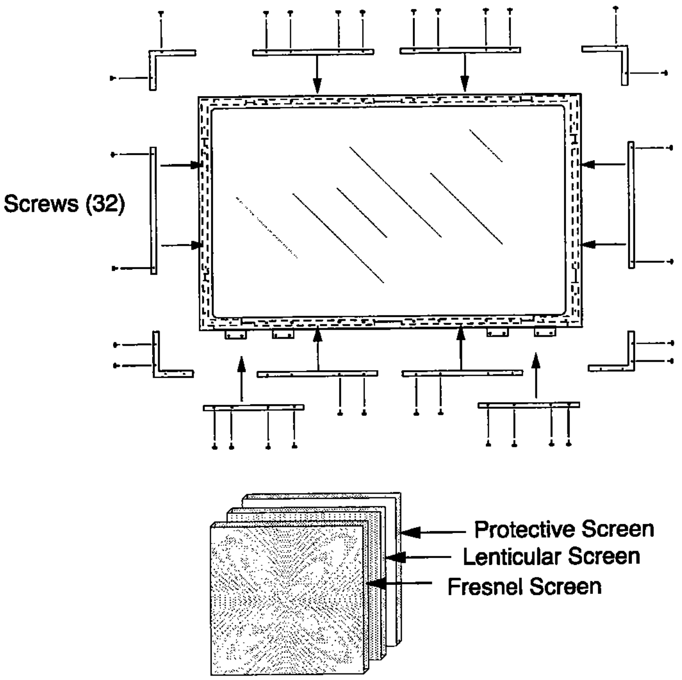
2. At this point the front cover is held only by four screws, be careful not to push the cabinet forward.
3. Remove screws and tilt the assembly forward while lifting it out of place.

Screen assembly

1. Remove the screen frame. See screen frame removal procedure above.
2. Place screen frame face down on a soft surface.
3. Remove all screen brackets and corner brackets

   Note:

   The brackets are painted black (permanent marker) on the edge to prevent reflection on image.



Screen assembly

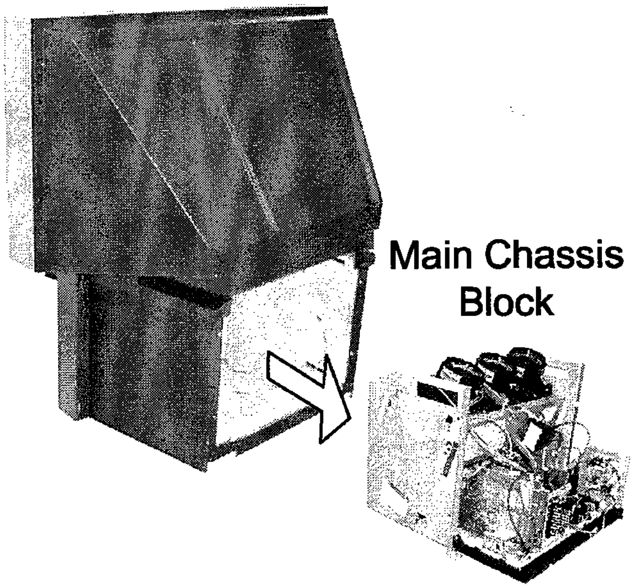
4. Remove the horizontal barrier panel at the back of the cabinet.
5. Unplug cables connectors (K1, JG3, G1 and speaker connectors) and pull out the main chassis block.

   Note:

   Main chassis block can be serviced either in normal position or laying on its back (protect hookup terminal from damage).

Main chassis block

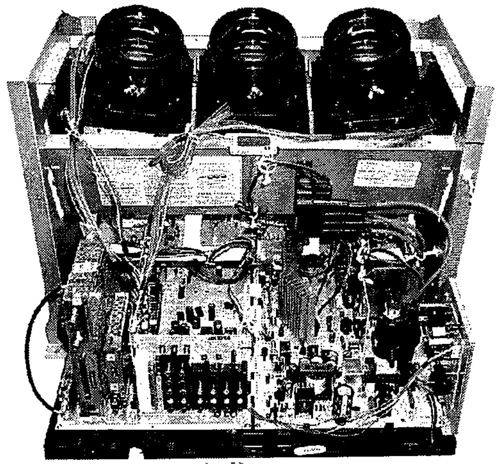
1. Remove the speaker grille.
2. Remove the back lower cabinet cover.
3. The main chassis block is secured to the cabinet by 2 screws at front, behind the Speaker Grill and 3 screws inside on the bottom of the optical frame).
4. Remove the horizontal barrier panel at the back of the cabinet.
5. Unplug cables (K1, G1, JG3 and speaker connectors) and pull out the main chassis block.



Chassis removal

13.1. Chassis assembly

The chassis assembly shown in figure includes all the electrical and optical (light box) components



Chassis back view

A/V BACK COVER ASSEMBLY

This assembly is secured to H-Board by 8 screws. Be sure to disconnect the fan cable from H-board.

H-Board

1. H-Board is connected to DG-board with H1 connector.
2. Pull carefully to the right to disconnect.

DT-Board

1. This board has a metal frame holder that is fastened to A-Board with 2 screws. This metal frame must be removed first before trying pulling up DT-board, otherwise it can be damaged.
2. This board has grommet squares, be careful to do not screw too tight, otherwise the grommet screw hole will get stripped.
3. After removing the metal frame pull up carefully from A41 connector in A-Board.

   NOTE:

   This board is non-serviceable. Except for JK8002

and JK8003.
When removing this board pull carefully.

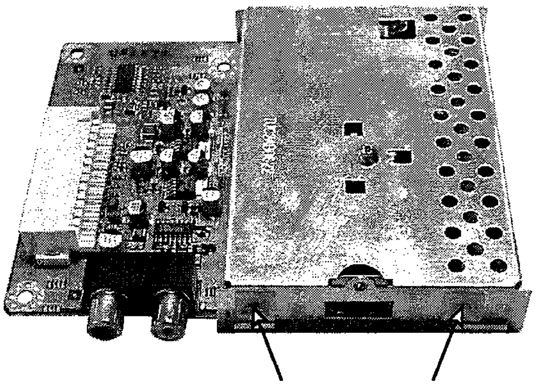
DV-Board

1. Plugs onto A-Board at the A51 connector.

NOTE:

This board is non-serviceable.
When removing this board pull carefully.

2. This board has two Grommet squares, be careful to do not screw too tight, otherwise this grommet screw hole will get stripped.


GROMMET SQUARES

NOTE:

This board is non-serviceable. Except for JK5002 (ANALOG AUDIO JACKS) and JK5001 (DV1 connector)
When removing this board pull carefully.

DG-Board

1. Plugs onto A-Board at A31 and A32 connectors (DG1 and DG2 respectively).
2. Remove plug cables from connectors DG4, DG5, DG6 and DG7.

NOTE:

This board is non-serviceable.
When removing this board pull carefully.

A-Board

1. A-Board is secured to the chassis tray with six screws.
2. The A-Board is mated to D-Board by four flexible connectors (male side of connectors): A1, A2, A3 & A4. To remove this board, unplug the connectors of A-Board pulling from the sides of each connector.

NOTE:

Some tie wraps that secure the wire dressings may need to be unfastened for chassis removal.

3. Remove plug connector in A30 that goes to T-Board (T2).
4. Remove plug connector in A15 that goes to LG-Board (LG1).

T-Board

1. T-Board is secured to a metal frame by 4 screws. This metal frame is fastened with 2 screws in D-Board and with 1 screw from the main chassis metal frame.
2. Disconnect T2 connector that goes to A-Board (A30).
3. Disconnect T1 plug connector that goes to D-Board (D10).

NOTE:

Some tie-wraps that secure the wire dressings may need to be unfastened for chassis removal.

D-Board

1. D-Board is secured to the chassis tray with five screws.
2. The D-Board is mated to the A-Board by four connectors (female side of connectors): D1, D2, D3 & D4. To remove this board, unplug the connectors on the A-Board pulling from the sides of each connector.

NOTE:

Some tie-wraps that secure the wire dressings may need to be unfastened for chassis removal.

DC-Board

1. Plugs onto the D-Board at the D21, D22 and D23 (DC1, DC2 and DC3 respectively) connectors.

NOTE:

This board is non-serviceable.
When removing this board pull carefully.

JG-Board

1. This board is fastened by 4 screws to the front panel.

NOTE:

This board is non-serviceable except for the JG1 and JG2 connectors.
Remove this board carefully.

R-Board

1. This board is secured to the upper front side of the light box by one screw, and plugged to R1 connector from DG5 on DG-Board.

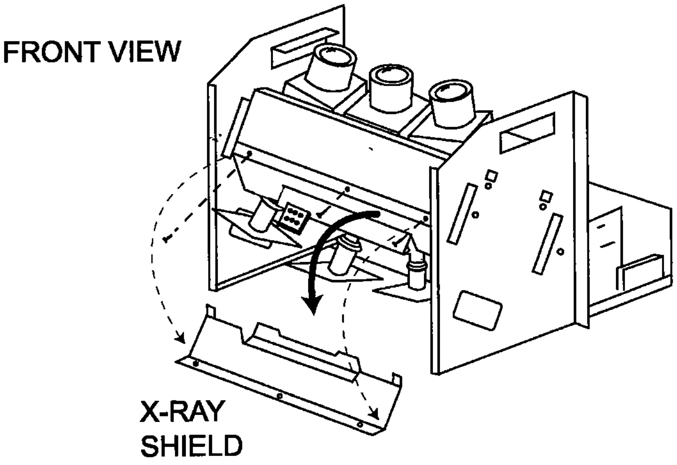
LR, LG and LB Board

1. Each board is plugged into the socket on the PRT neck, LR-Board on red PRT, LG-Board on green PRT and LB-Board on blue PRT.

13.2. Disassembly for CRT replacement

To facilitate CRT replacement, the complete CRT mounting chassis does not need to be removed.

1. Remove the main chassis block from the cabinet.
2. Remove the optical bracket metal cover (front side x-ray shield) by removing 3 screws on top.

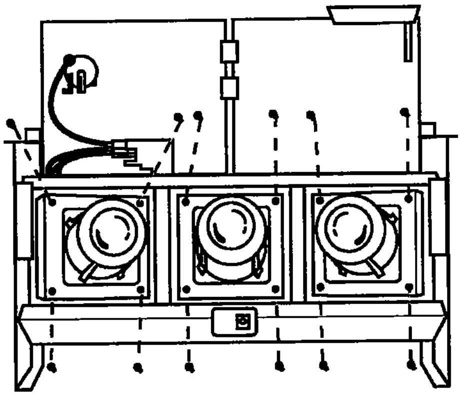


CRT replacement

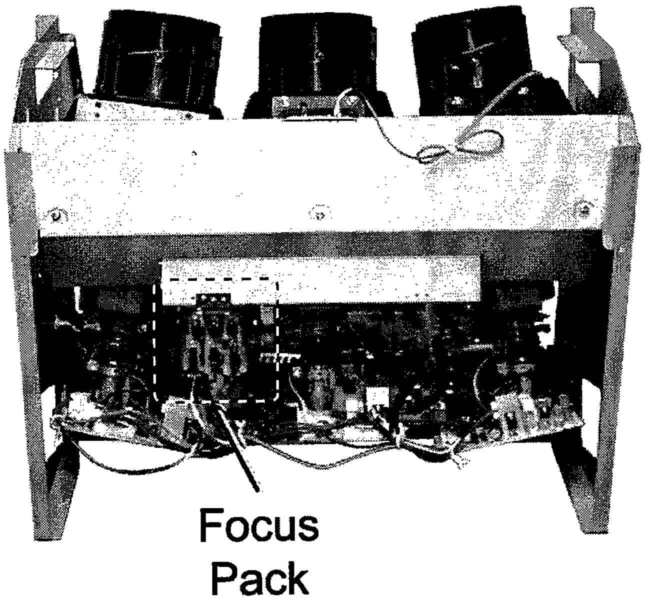
3. Remove the defective CRT anode lead from the high voltage distributor block that is mounted on the flyback transformer. Discharge to CRT chassis.
4. Unplug connectors from D-Board. See board layout. D14 for red, D15 for green and D16 for blue
5. Unplug the defective CRT black DAG ground connector from the CRT Board.
6. Remove the CRT Board from the defective CRT neck.
7. Remove (4) screws from the defective CRT housing.

   Caution:

   Do not remove the (4) CRT lens screws. Support the CRT assembly when loosening screws.



CRT replacement



Focus pack location

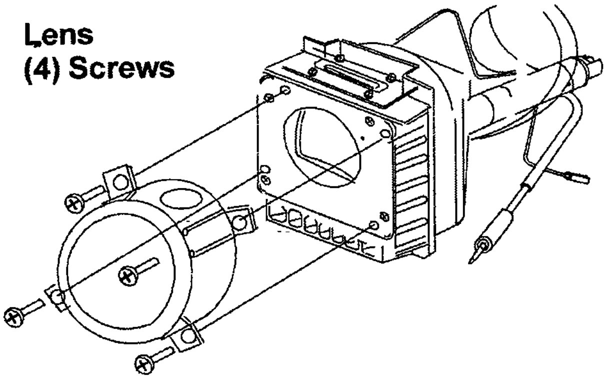
8. Release CRT anode lead from CRT chassis wire clamp and all other wires from holders.
9. Loosen a screw that secures the DY and remove it from the CRT neck.

   Caution:

   To insure protection against x-ray radiation, the lens must be mounted in place at all times when power is applied to the PTV

CRT replacement

1. Remove CRT focus lens assembly (4 screws)



CRT assembly

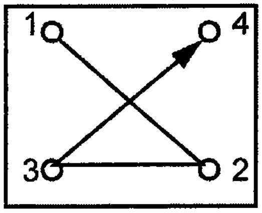
2. Lay CRT face down on a soft cloth.
3. Note position of yoke with centering tabs and remove from defective CRT.
4. Remove CRT DAG ground from defective CRT. Mount it on the replacement CRT exactly as it was on the defective CRT.

   Note:

   Replacement CRT is supplied with H.V. anode lead attached.
5. Wire the anode lead wire.
6. Install yoke with other CRT neck assemblies on CRT neck in the same order and position as removed from the defective CRT.
7. Press yoke against bell of CRT and tighten the clamp

just snug enough so it will not easily shift.

8. Assemble CRT focus lens assembly to new CRT with (4) screws. Make sure focus lens adjustment nut is in the same location as on other CRT focus lens

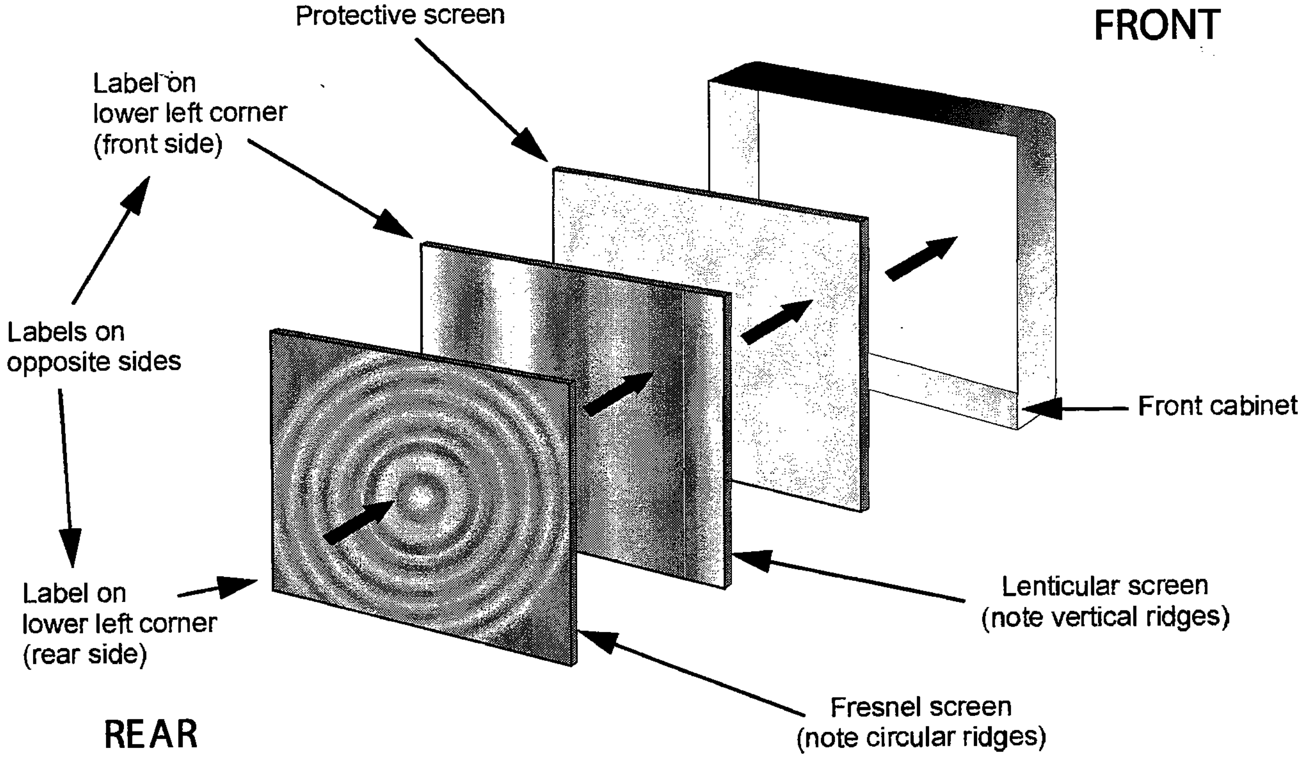


CRT screw tightening order

Note:

Please assemble with screws in the order shown and tighten with the same torque.

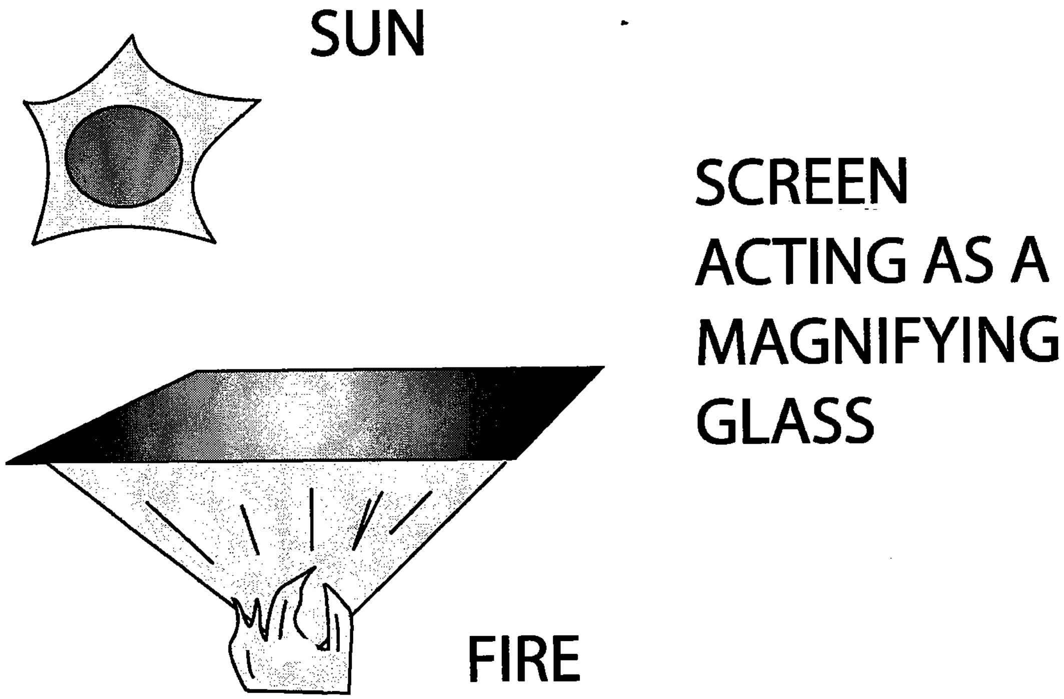
13.3. PTV screen assemblies


Protective screen
FRONT
Label on lower left corner (front side)
Labels on opposite sides
Front cabinet
Label on lower left corner (rear side)
Lenticular screen (note vertical ridges)
Fresnel screen (note circular ridges)
REAR

Screen assemblies

13.4. Screen assemblies warning

When storing or disposing of screen assemblies, be sure not to place them in direct sunlight. These screens may act as a magnifying glass and could cause a fire.


SUN
SCREEN ACTING AS A MAGNIFYING GLASS
FIRE

14 B+ voltages table

Preparation:

Set the following controls

- Picture to Normal
- Bright to Normal
- Volume to MIN (0)

Procedure:

1. Apply a NTSC COLOR BAR pattern
2. Connect the negative lead of the digital voltmeter to TPGND1 (cold ground).
3. Connect the positive lead of the digital voltmeter to each test point and confirm the B+ voltages.

No.	D-Board Test point	Voltage
1	C830 (+)	138.6±1.0
2	TPD13	19.0±1.5
3	TPD12	19.0±1.5
4	TPD11	-19.5±1.5
5	TPD10	22.0±1.5
6	C845 (-)	-22.5±1.5
No.	A-Board Test points	Voltage
1	TP118	5.0±0.5
2	TP114	2.5±0.5
3	TP070	5.0±0.5
4	L893	9.0±0.5
5	TP137	30.0±0.5

15 Service Mode (electronic controls)

This receiver has electronic technology using the IC bus concept. It performs as a control function and it replaces many mechanical controls. Instead of adjusting mechanical controls individually, many of the control functions are now performed by using "on screen display menu". (The service adjustment mode.)

NOTE:

It is suggested that the technician reads all the way through and understand the following procedure for entering/exiting the service adjustment mode; then proceed with the instructions working with the receiver. When becoming familiar with the procedure, the flow chart for service mode may be used as a quick guide.

15.1. Quick entry to service mode:

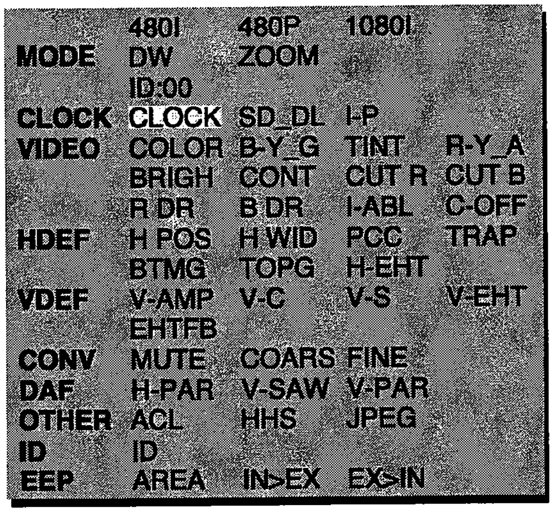
When minor adjustments need to be done to the electronic controls, the method for entering the service mode without removal of the cabinet back is as follows, using the remote control:

1. Select SET-UP icon, enter "Program CH" and select CABLE mode in "Input Setup" option.
2. Select TIMER icon and set SLEEP time for 30 Min.
3. Press "OK" then VOL up to exit menus.
4. Tune to the Channel 124.
5. Adjust VOLUME to minimum (0).
6. Press VOL ← (decrease) on receiver. Red "CHK" appears in upper corner.

   To toggle between aging and service modes:

   While the "CHK" is displayed on the left top corner of the CRT, pressing "OK" and "VOL" UP on the TV simultaneously will toggle between the modes. Red "CHK" for service mode and yellow "CHK" for aging.

7. Press POWER on the remote control to display the service adjustment modes menu, select adjustment by pressing the VOL right/left buttons and CH up/down buttons on the remote and OK to enter the adjustment.



	480I	480P	1080I	
MODE	DW	ZOOM		
	ID:00			
CLOCK	CLOCK	SD_DL	I-P	
VIDEO	COLOR	B-Y_G	TINT	R-Y_A
	BRIGH	CONT	CUT R	CUT B
	R DR	B DR	I-ABL	C-OFF
HDEF	H POS	H WID	PCC	TRAP
	BTMG	TOPG	H-EHT	
VDEF	V-AMP	V-C	V-S	V-EHT
	EHTFB			
CONV	MUTE	COARS	FINE	
DAF	H-PAR	V-SAW	V-PAR	
OTHER	ACL	HHS	JPEG	
ID	ID			
EEP	AREA	IN>EX	EX>IN	

Service mode menu

15.2. Exiting the service mode:

This PTV goes out from service mode when it is unplugged or turned OFF. To exit the service mode, turn the TV OFF or unplug the PTV from AC.

Other method

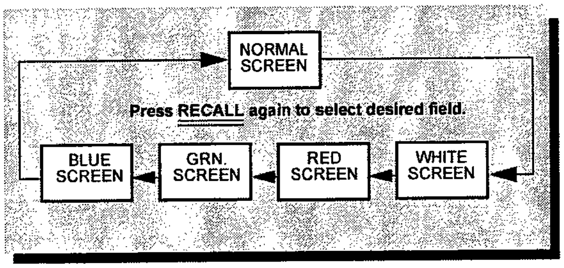
Press OK and POWER on the receiver simultaneously for at least 2 seconds.The receiver momentarily performs a self-check, tuned in channel 3 with a preset level of sound. To completely make an entire reset of the PTV unplug AC cord from AC outlet and plug it back in, then turn PTV power ON.Any programmed channels, channels caption data and some others user defined settings will be erased when performing this reset.

IMPORTANT NOTE

Always check that PTV exits the service mode

To check colors:

Press RECALL on the remote control when in service mode (red "CHK" is displayed) to enter the purity field check mode.



Color check

15.3. Service adjustment default values for items

DESCRIPTION	REGISTER	FORMAT				
		NTSC (480i)	480i ZOOM	480P	480P ZOOM	1080i
CLOCK ADJ	CLOCK	124	N/A	N/A	N/A	N/A
FIRMWARE DOWNLOAD	SD_DL	00	00	00	00	00
INTERLACED TO PROGRESSIVE	I-P	00	N/A	00	00	N/A
COLOR	COLOR	20	N/A	N/A	N/A	2A
MAGENTA TINT ADJ	B-Y_G	2B	N/A	N/A	N/A	34
TINT	TINT	85	N/A	N/A	N/A	80
YELLOW TINT ADJ	R-Y_A	96	N/A	N/A	N/A	83
SUB-BRIGHTNESS	BRIGH	09 F8	N/A	N/A	N/A	0A 34
SUB-CONTRAST	CONT	02 9F	N/A	N/A	N/A	02 91
RED CUT-OFF	CUT R	01 F5	N/A	N/A	N/A	01 F5
BLUE CUT-OFF	CUT B	02 23	N/A	N/A	N/A	02 23
RED DRIVE	R DR	64	N/A	N/A	N/A	N/A
BLUE DRIVE	B DR	42	N/A	N/A	N/A	N/A
INDIVIDUAL ABL CHECK	I-ABL	VARIABLE	N/A	VARIABLE	N/A	VARIABLE
CUT OFF ADJ	C_OFF	00	00	00	N/A	00
HORIZONTAL POSITIONING	H POS	01 83	01 83	01 83	N/A	01 83
HORIZONTAL WIDTH	H WID	51	51	51	N/A	51
PINCUSHION CORRECTION	PCC	40	40	40	N/A	40
TRAPEZOID	TRAP	81	81	81	N/A	81
BOTTOM CORNER PINCUSHION	BTMG	B0	B0	B0	N/A	B0
TOP CORNER PINCUSHION	TOPG	B4	B4	B4	N/A	B4
HORIZONTAL EHT PRESET	H-EHT	N/A	N/A	N/A	N/A	31
VERTICAL SIZE	V-AMP	00 94	00 94	00 94	N/A	00 94
VERTICAL LINEARITY	V-C	87	87	87	N/A	87
VERTICAL S CORRECTION	V-S	59	59	59	N/A	59
VERTICAL EHT PRESET	V-EHT	N/A	N/A	N/A	N/A	1B
FLYBACK EHT PRESET	EHTFB	FF	FF	FF	N/A	FF
MUTE CONVERGENCE	MUTE	00	00	00	N/A	00
COARSE ADJ	COARS	00	00	00	N/A	00
FINE ADJ	FINE	00	00	00	N/A	00
H DAF ADJUSTMENT	H-PAR	0	0	0	N/A	0
V SAW DAF ADJUSTMENT	V-SAW	0	0	0	N/A	0
V DAF ADJUSTMENT	V-PAR	0	0	0	N/A	0
ACL ADJUSTMENT	ACL	00	00	0	N/A	00
JPEG SERVICE MENU	JPEG	00	00	0	N/A	00
ID*	ID	00	00	00	00	00
AREA	AREA	FIX	FIX	FIX	N/A	FIX

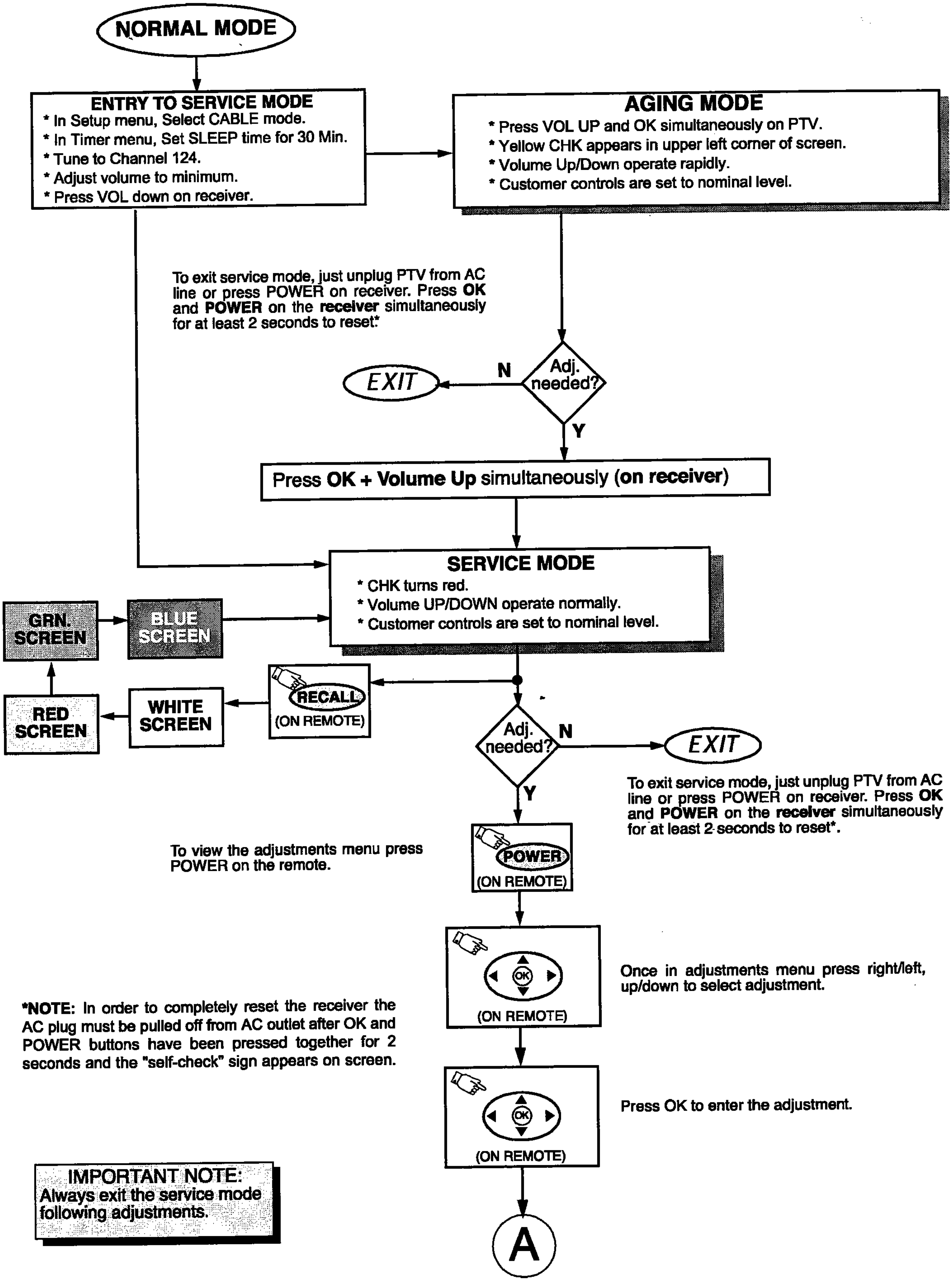
***IMPORTANT:**

The default ID register value should not be modified in any way, it has been already set to a factory default value specifically for the models listed in this manual.

NOTE:

The above table shows the default values for the service items, this values can change depending on the serviced PTV.

15.4. Instructional flow for service mode


NORMAL MODE
ENTRY TO SERVICE MODE
* In Setup menu, Select CABLE mode.
* In Timer menu, Set SLEEP time for 30 Min.
* Tune to Channel 124.
* Adjust volume to minimum.
* Press VOL down on receiver.
AGING MODE
* Press VOL UP and OK simultaneously on PTV.
* Yellow CHK appears in upper left corner of screen.
* Volume Up/Down operate rapidly.
* Customer controls are set to nominal level.
EXIT
N
Adj. needed?
Y
Press OK + Volume Up simultaneously (on receiver)
SERVICE MODE
* CHK turns red.
* Volume UP/DOWN operate normally.
* Customer controls are set to nominal level.
GRN. SCREEN
BLUE SCREEN
RED SCREEN
WHITE SCREEN
RECALL
(ON REMOTE)
Adj. needed?
N
EXIT
Y
POWER
(ON REMOTE)
OK
(ON REMOTE)
OK
(ON REMOTE)
A

To exit service mode, just unplug PTV from AC line or press POWER on receiver. Press **OK** and **POWER** on the **receiver** simultaneously for at least 2 seconds to reset*

To exit service mode, just unplug PTV from AC line or press POWER on receiver. Press **OK** and **POWER** on the **receiver** simultaneously for at least 2 seconds to reset*.

To view the adjustments menu press POWER on the remote.

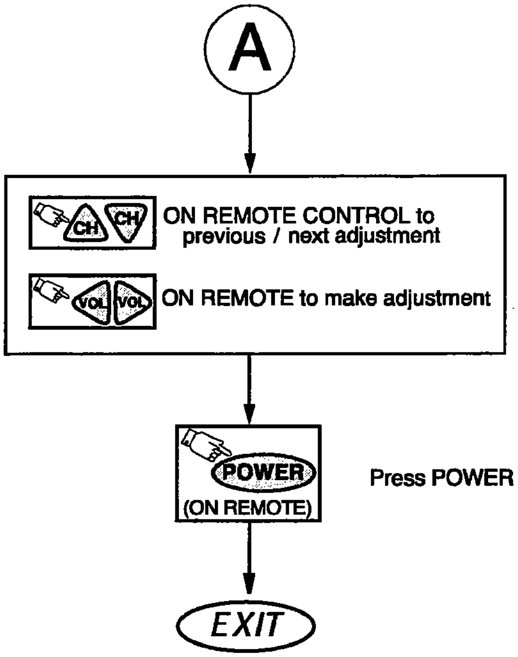
Once in adjustments menu press right/left, up/down to select adjustment.

Press OK to enter the adjustment.

***NOTE**: In order to completely reset the receiver the AC plug must be pulled off from AC outlet after OK and POWER buttons have been pressed together for 2 seconds and the "self-check" sign appears on screen.

IMPORTANT NOTE:
Always exit the service mode following adjustments.

15.5. Instructional flow for service mode (continued...)


A
CH CH
ON REMOTE CONTROL to previous / next adjustment
VOL VOL
ON REMOTE to make adjustment
POWER
(ON REMOTE)
EXIT

Press POWER to exit the adjustment.

Press POWER to exit DAC's MENU then press OK and POWER buttons on the PTV simultaneously for at least 2 seconds to exit service mode and reset*.

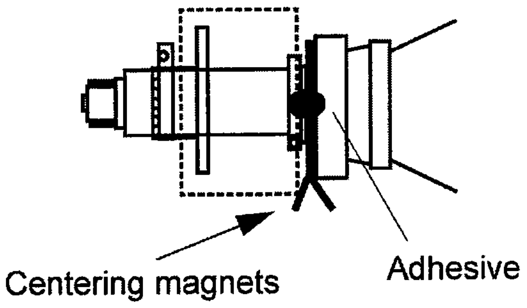
***NOTE:** In order to completely reset the receiver the AC plug must be pulled off from AC outlet after OK and POWER buttons have been pressed together for 2 seconds and the "self-check" sign appears on screen.

16 CRT Set Up

CAUTION:

Insure that yoke plugs are reconnected on D-Board before turning the PTV ON to prevent damage to the horizontal output transistor and/or CRTs.

1. Connect test generator to the antenna terminal and set for a monoscope pattern.
2. Loosen yoke clamp, seat yoke against bell of CRT and rotate to correct yoke tilt (compare to adjacent CRT). Tighten yoke clamp.
3. Remove adhesive from centering tabs and set centering tabs for zero correction.



Adhesive removal

4. Cover replacement CRT lens and static converge the tubes not replaced, if needed. Check size and linearity of pattern and adjust as required
5. Uncover replacement CRT lens and cover other two CRT lenses. Adjust electrical and optical focus (lens), if required.
6. Uncover all CRT lenses and use yoke centering magnet to converge replacement CRT (in center area of screen only) with other two CRTs. Disregard of convergence in areas other than center area.
7. Perform white balance adjustments.

16.1. Dynamic focus adjustments

1. Focus adjustments should be performed after 1 hour of aging.
2. Use oscilloscope with 100 : 1 probe.
3. Apply a NTSC crosshatch pattern to adjust focus.
4. Adjust the red, blue and green focus VR on the focus block for best focus of overall picture of each CRT.
5. To change DAF DATA, enter to service mode, then press POWER on remote to display DACs menu, then select DAC by pressing CH (RIGHT/LEFT) and VOL (UP/DOWN), then press OK to enter to DAC, then adjust by pressing VOL (RIGHT/LEFT); press OK, to save press OK again or OTHER key to exit without saving.

Procedure:

NOTE:

1080i, 480p, 480i pattern can be obtained from Panasonic's TU-DST51 set top box DTV decoder.

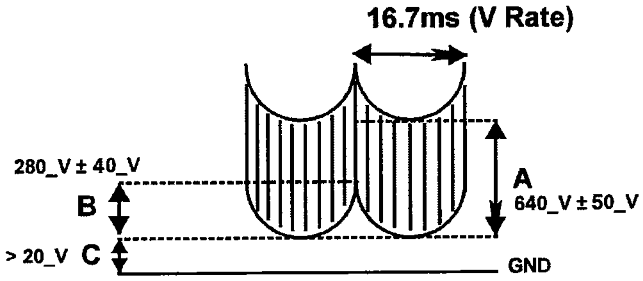
1. Enter to service mode and set the following default DATA

H-PAR	+247
V-SAW	+1
V-PAR	+15

NOTE:

The signal (NTSC, 1080i and NTSC in ZOOM option), should be applied and displayed to enter values for specific format adjustment.

2. For 1080i set the default values.
3. For NTSC and NTSC ZOOM apply a white pattern and perform the following steps.
4. Connect the scope probe to D30, GND to Q551 heat sink.
5. Confirm that level of A is 640 ± 50V, adjust "H-PAR" DAC to set to specification level.
6. Confirm that the voltage level in D30 is similar between point E and F, if not, adjust V-SAW DAC.
7. Confirm that level of B is 280 ± 40 V, adjust "V-PAR" DAC to set to specification level.
8. Confirm that level of C is more than 20 V, adjust "H-PAR" DAC to set to specification level.



Dynamic focus adjustment waveform

16.2. Focus - Electrical & optical adjustments

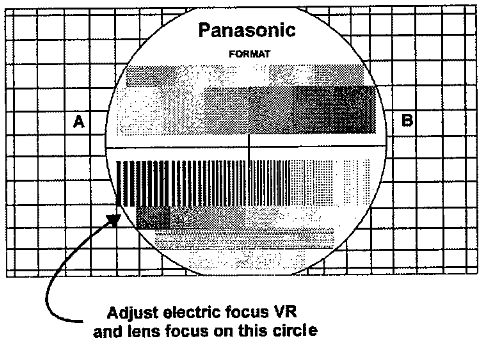
(use for minor adjustment or for final adjustment, for complete adjustment see following section.)

Electrical Adjustment

NOTE:

1080i, 480p, 480i pattern can be obtained from Panasonic's TU-DST51 set-top box DTV decoder.

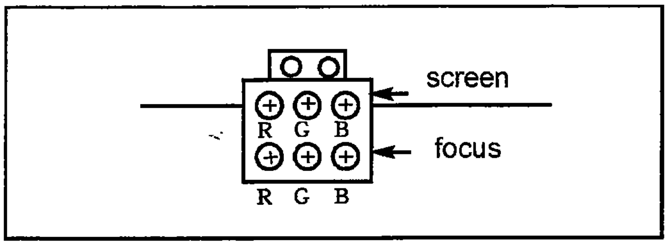
1. Apply a crosshatch with dots pattern



Lens focus adjustment

	RED	GREEN	BLUE
Electric focus	B	A/B	A
Optical Focus	B	A/B	A

2. Set VIDEO "C_OFF" DAC from 00 to 02, and project only red. Adjust red focus VR so that focus is best



Focus pack

3. Adjust red lens focus (mechanical) until focus is best.
4. Adjust red focus VR again.
5. Set VIDEO "C_OFF" DAC from 00 to 01, and project only green.
6. Repeat steps for green only.
7. Set VIDEO "C_OFF" DAC from 00 to 03, and project only blue.
8. Repeat steps for blue only.

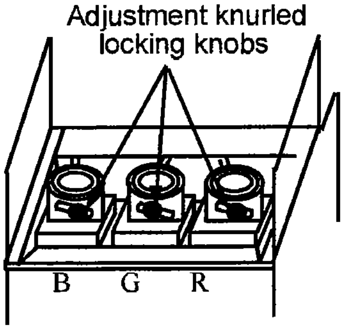
16.2.1. Focus - Optical lens adjustment

Optical adjustments

NOTE:

This adjustment normally should not require resetting unless the lenses have been replaced or adjustment has changed.

1. Optical focus adjustment is located on the top of each CRT lens system. Loosen the adjustment knurled locking knob.



REAR VIEW
Optical lens focus adjustment

2. Turn the PTV ON. Apply and view a crosshatch with dots pattern.
3. Adjust each lens focus for best focus while viewing each CRT.
4. Cover the red and blue CRT, projecting green only. Rotate the green lens for best focus around screen center area.
5. Do the same for the red focus lens while projecting red only.
6. Repeat for blue.
7. Align VM coils.

17 Electronic Adjustments

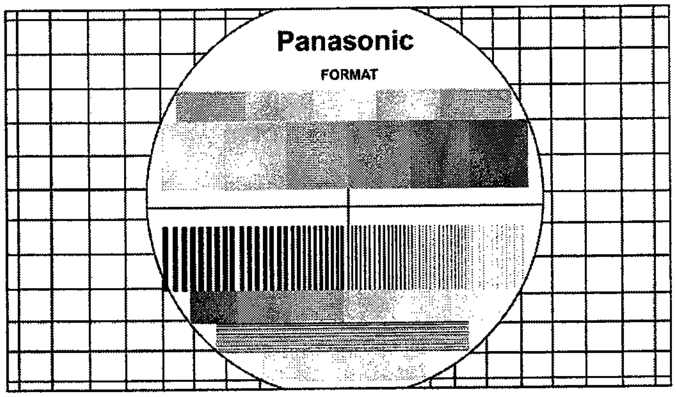
17.1. Horizontal phase adjustment (H POS)

This adjustment is intended to correct the horizontal position of the picture

NOTE:

1080i, 480p, 480i pattern can be obtained from Panasonic's TU-DST51 set-top box DTV decoder.

1. Apply a pattern that lets adjust the image to correct vertical size (see above note).
2. Set VIDEO "C_OFF" DAC from 00 to 01 (to project only green).
3. Set DAC MUTE from 00 to 01 (disabling digital convergence).
4. Turn green deflection yoke until line is perfectly horizontal.
5. Adjust "H POS" DAC data so that pattern is in the center of screen.
6. Enable digital convergence by changing DAC MUTE from 01 to 00.
7. Set VIDEO "C_OFF" DAC from 01 to 00



17.2. Centering magnets adjustment

NOTE:

1080i, 480p, 480i pattern can be obtained from Panasonic's TU-DST51 set-top box DTV decoder.

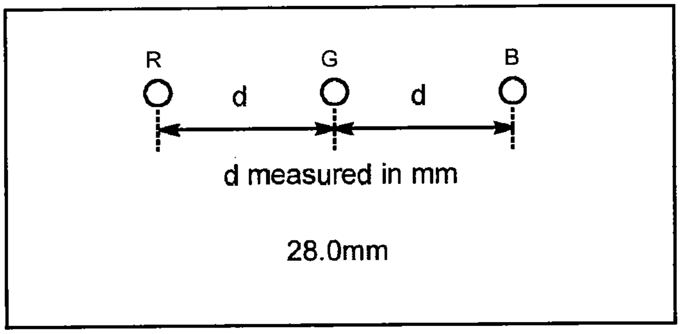
Procedures:

1. Apply a crosshatch pattern with dots.
2. Set VIDEO "C_OFF" DAC from 00 to 01 to project only green.
3. Set DAC MUTE from 00 to 01 (disabling digital convergence).
4. Loose the deflection coil screw on the green CRT.
5. Adjust green deflection coil until the horizontal center line is horizontal.
6. Adjust centering magnets until the green pattern is equal on left and right. Adjust also for horizontal and vertical tilt.

   NOTE:

   Push deflection coil to top of CRT neck, then tighten deflection screw after adjusting each CRT centering and tilt.
7. Set VIDEO "C_OFF" DAC from 01 to 03 to project only blue.

   Adjust deflection coil until the horizontal center line matches the pattern of the grid and is leveled.
8. Adjust blue centering magnets until the pattern center is at the appropriate distance as indicated on the following figure.



Centering magnets adjustment

9. Set VIDEO "C_OFF" DAC from 01 to 02 to project only red.
10. Adjust red deflection coil until the horizontal center line matches the pattern of the grid and is leveled.
11. Adjust red centering magnets until the pattern center is at the appropriate distance as indicated on figure.
12. Enable digital convergence by changing DAC MUTE from 01 to 00.
13. Set VIDEO "C_OFF" DAC from 02 to 00. Following the adjustment, make sure that all deflection coils are pushed completely toward the CRT cones and that all screws are tightened.

17.3. Vertical linearity adjustment (V-C and V-S)

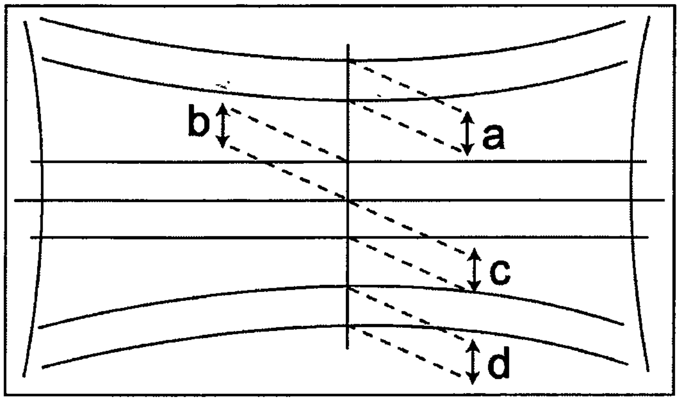
This adjustment is intended to make the picture vertically proportional (top, center and bottom)

NOTE:

1080i, 480p, 480i pattern can be obtained from Panasonic's TU-DST51 set-top box DTV decoder.

1. Apply a pattern that lets adjust the image to correct vertical linearity (see above note).
2. Set VIDEO "C_OFF" DAC from 00 to 01 (to project only green).
3. Set DAC MUTE from 00 to 01 (disabling digital convergence).
4. Adjust centering magnets so that the center of the pattern get aligned with screen frame center.
5. Adjust VDEF "V-C" and "V-S" DAC until vertical size is proportional on top and bottom. Confirm to correct linearity in the middle of the screen.
6. Set DAC MUTE from 01 to 00 (disabling digital convergence).
7. Set VIDEO "C_OFF" DAC from 01 to 00

screen frame



a=d, b=c

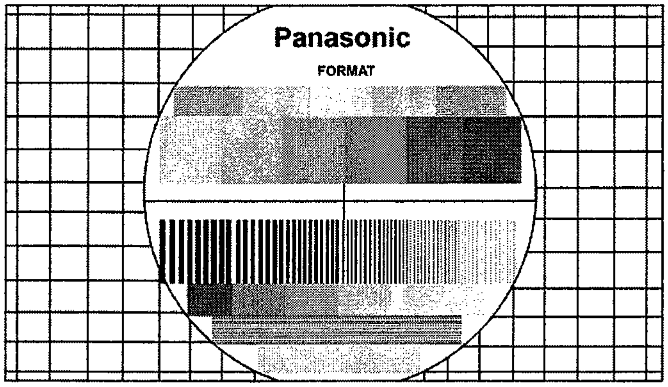
17.4. Vertical size adjustment (V-AMP)

This adjustment is intended to correct the vertical size of the picture.

NOTE:

1080i, 480p, 480i pattern can be obtained from Panasonic's TU-DST51 set-top box DTV decoder.

1. Apply a pattern that lets adjust the image to correct vertical size (see above note).
2. Set VIDEO "C_OFF" DAC from 00 to 01 (to project only green).
3. Set DAC MUTE from 00 to 01 (disabling digital convergence).
4. Adjust centering magnets so that the center of the pattern get aligned with screen frame center.
5. Adjust VDEF "V-AMP" DAC until vertical size is proportional on top and bottom.
6. Set DAC MUTE from 01 to 00 (disabling digital convergence).
7. Set VIDEO "C_OFF" DAC from 01 to 00



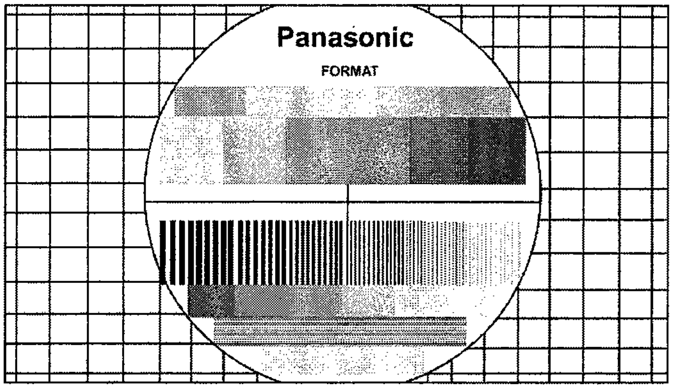
17.5. Horizontal size adjustment (H_POS)

This adjustment is intended to correct the horizontal position of the picture.

NOTE:

1080i, 480p, 480i pattern can be obtained from Panasonic's TU-DST51 set-top box DTV decoder.

1. Apply a pattern that lets adjust the image to correct horizontal position (see above note)
2. Set VIDEO "C_OFF" DAC from 00 to 01 to project only green.
3. Set DAC "MUTE" from 00 to 01 (disabling digital convergence).
4. Turn green deflection yoke until line is perfectly horizontal.
5. Adjust "H WID" DAC data so that pattern has the correct horizontal size.



6. Set DAC MUTE from 00 to 01 (disabling digital convergence).
7. Set VIDEO "C_OFF" DAC from 01 to 00.

17.6. Pincushion adjustment (PCC)

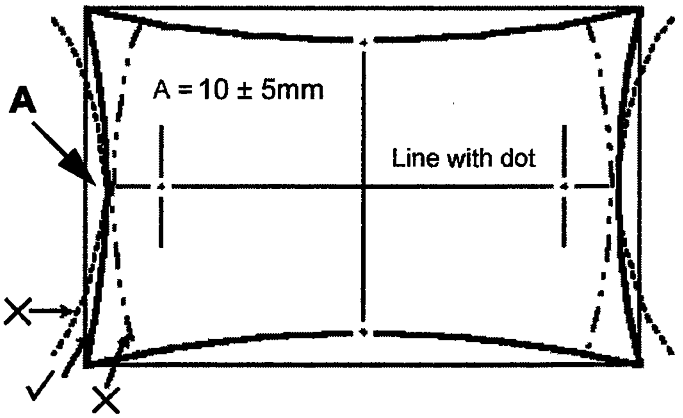
This adjustment is intended to correct curved sides of the picture.

NOTE:

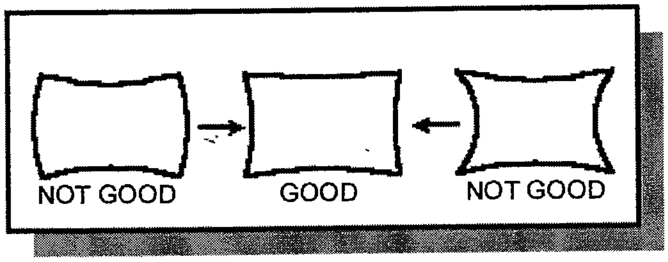
1080i, 480p, 480i pattern can be obtained from Panasonic's TU-DST51 set-top box DTV decoder.

Procedure:

1. Apply a pattern that lets adjust the image to correct curved sides (see above note)
2. Set VIDEO "C_OFF" DAC from 00 to 01 to project only green.
3. Set DAC "MUTE" from 00 to 01 (disabling digital convergence)
4. If the distance at "A" is not 10 ± 5mm, enter H DEF "H WID" DAC and adjust by VOLUME UP/DOWN until it is 10± 5mm.



Pincushion adjustment



Pincushion

5. If not all corners of cross hatch appear in screen, enter V DEF "V-AMP" DAC and adjust until they appear.
6. Confirm that measurement of "A" has not changed.
7. Enable digital convergence by changing DAC MUTE from 01 to 00.
8. Set VIDEO "C_OFF" DAC from 01 to 00.

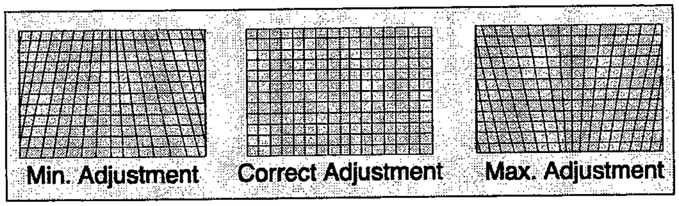
17.7. Trapezoid adjustment (TRAP)

NOTE:

1080i, 480p, 480i pattern can be obtained from Panasonic's TU-DST51 set-top box DTV decoder.

Procedure:

1. Apply a crosshatch pattern.
2. Enter service mode, select "TRAP" and adjust DATA with VOLUME keys in remote so that lines at right and left are vertical like a solid line.



17.8. Horizontal size adjustment (H WID)

This adjustment is intended to adjust horizontal width of the picture.

NOTE:

1080i, 480p, 480i pattern can be obtained from Panasonic's TU-DST51 set-top box DTV decoder.

1. Apply a pattern that lets adjust the horizontal size.
2. Set VIDEO "C_OFF" DAC from 00 to 01 to project only green.
3. Set DAC "MUTE" from 00 to 01 (disabling digital convergence).
4. In service mode, adjust "H WID" DAC until the picture horizontal size is balanced at left and right side of screen.
5. Set DAC "MUTE" from 01 to 00 (disabling digital convergence).
6. Set VIDEO "C_OFF" DAC from 01 to 00.

17.9. Sub-Bright adjustment (BRIGH) and ABL check

This adjustment is intended to set 7 IRE signal to black level mode.

Procedure:

1. Set PICTURE MODE TO VIVID, PICTURE settings to normal, NATURAL COLOR to OFF and COLOR TEMPERATURE to NORMAL.
2. Connect meter (positive lead) to D31 pin 2 and (negative lead) to D31 pin 1.
3. Apply a color bar with no color or if available a grey levels pattern.
4. Adjust DAC "BRIGH" data so that bar near to black bar becomes near black
5. Apply an HD 1080i signal and repeat this adjustment for HD 1080i mode
6. To check ABL apply a white pattern and put user bright control (BRIGTHNESS in Picture menu) control to max. and confirm that reading on meter is 12.4 ± 0.8V.

17.10. Individual ABL Check (I-ABL)

Procedure:

1. In PICTURE menu set the picture to "NORMAL".
2. Apply a pure blue flat signal from a signal generator or another source.
3. In service mode select "I-ABL" DAC from service menu.
4. Confirm that the 3 hex values that appear on screen (below the "I-ABL" label) are close to 0, i.e. "00 00 00"
5. If the "I-ABL" values differ too much from 0, repeat bright and ABL adjustment again.

17.11. Red, green & blue screen Cut-Off

1. Use either a no input signal condition or raster from the NTSC generator.
2. Observing the green tube directly or via a reflective surface, adjust the VR on focus pack for the green tube for minimum noise.
3. Adjust the noise level in the red and blue tubes to match the noise level in the green tube.

17.12. White balance adjustment

NOTE:

1080i, 480p, 480I pattern can be obtained from Panasonic's TU-DST51 set-top box DTV decoder.

Prior to this adjustment, perform sub-contrast adjustment. This adjustment requires the service user skills in observing what a screen without color should look like (white picture).

Preparation:

1. Set the following in the user picture menu as follows:
    - PIC MODE to VIVID
    - COLOR to center (31)
    - PICTURE to max (63)
    - BRIGHT to center (31)
    - SHARPNESS to min. (0)
    - TINT to center (31)
    - NATURAL COLOR to OFF
    - COLOR TEMPERATURE to COOL

1. Enter the service mode.

2. Apply a black and white pattern to one of the video inputs (see above note) color bar with no color.

17.12.1. High light white balance adjustment

1. Adjust DAC R_DR for red and B_DR for blue adjustments.
2. Make sure the screen is not blue or green. The screen should be white in the white area.
3. Check the black and white area for a black and white picture with even shades of gray and no color tint in the picture.

17.12.2. Low light white balance adjustment

1. Adjust DAC CUT_R for red and DAC CUT_B for blue.
2. Check the screen for even white in all areas, no color.
3. Check the black and white pattern for a black and white picture, even shades of gray and no color tint in the low light areas.
4. Repeat the high light and low light white balance again until the white balance tracks from high light to low light.

17.13. Color adjustment (TINT, B-Y_G, R-Y_A)

NOTE:

1080i, 480p, 480i pattern can be obtained from Panasonic's TU-DST51 set-top box DTV decoder.

This adjustment requires that the servicer use the skills in observing what a colorbar pattern should looks like.

Preparation:

1. Set the following in the user picture menu as follows:
   - PIC MODE to VIVID
   - COLOR to center (31)
   - PICTURE to max (63)
   - BRIGHT to center (31)
   - SHARPNESS to min. (0)
   - TINT to center (31)
   - NATURAL COLOR to OFF
   - COLOR TEMPERATURE to COOL

Procedure:

1. Apply a color bar pattern
2. Adjust DAC "TINT" so that the fourth bar from right to left becomes purple and good color balance.
3. If the adjustment is high, the bar will look pinkish, if it is low will look bluish.
4. Adjust "B-Y_G" so blue look natural, and the rest of the colors become in balance.
5. Adjust "R-Y_A" so red look natural, and rest of the colors become in balance.
6. Check that white bar is real white, no bluish or reddish or tending to become grey.

17.14. Tint and color check

Set picture mode to VIVID mode. Again, the service ability to see color and the balance of color is important for theses adjustments.

Tint check

1. In picture menu set PICTURE NORMAL to YES.
2. Apply color bars to the video input.
3. Magenta is composed of two colors, blue and red.
4. Check to see that magenta does not have too much blue or too much red.
5. Check cyan. Cyan is composed of blue and green. It should not have too much blue or green.
6. Use a test signal from a VCR or laser disk that has a pre-recorded close up of a signal that has good flesh tones.
7. The signal on the VCR or laser disk should look normal.

Color Check

Using a clean RF or video signal, set the color level so that it does not saturate or appear harsh. Make sure that color is not set so that it appears dull and washed out. Look for natural colors, try to adjust the picture to appear as a normal photograph.

17.15. Clock Adjustment (CLOCK)

Preparation:

Connect the frequency counter from TP0PLL (A-Board Connector A31 pin 56) to cold ground.

Note:

Frequency Counter probe capacitance should be 8pF or less.

Procedure:

1. Turn the PTV "ON" with the A.C. power applied.
2. Measure TP0PLL (A-Board Connector A31 pin 56) for frequency and record the reading.

   Note:

   Pin measurement must have at least four digits of resolution following the decimal point. Example: 000.0000
3. Place the PTV into service mode for making electronic adjustment, select the clock adjustment DAC CLOCK and change value to 128.
4. Calculate and set CLOCK based on the following formula:

$$CLOCK = 128 + 0.450x106x\frac{\{732.422-TP0LL[\mathrm{Hz}]\}}{732.4220}$$

Note:

TP0PLL measurement will not change regardless of the value stored in CLOCK.

17.16. Receiver Firmware Upgrade

1. First check that receiver is operating out of service mode (normal use).

   IMPORTANT:

   For better results in this procedure, be sure that the set is already powered ON and if the set is powered OFF, wait at least 10 seconds after turning ON the receiver before inserting the SD service card to the service slot.

2. Check the current software version of receiver by pressing on front panel the next sequence rapidly:

   VOLUME UP and MENU buttons at the same time, then CHANNEL UP and MENU buttons at the same time.

3. A status screen will appear displaying information about the System.
4. The "System" information displays the current software version of the receiver along with the release date.
5. Insert the SD service card in the back of the receiver in the slot with a sign "SERVICE ONLY".
6. The receiver will automatically display a screen, showing the current software version of the receiver (right) and the software version stored in the SD service card (left), (i.e. ROM Ver: 00010306 indicates that current ROM version is 1.3.6.) . In case that receiver doesn't show this screen enter service mode (see service mode page 27), display the service menu by pressing POWER on the remote and select "SD_DL" DAC register.
7. Press OK button on the remote to start the software upgrade on the receiver.

   IMPORTANT!:

   ONCE THAT DOWNLOADING PROCESS HAS BEGUN IT CANNOT BE CANCELLED. DURING SOFTWARE DOWNLOADING DO NOT DISCONNECT THE AC PLUG FROM OUTLET!!, THIS COULD RESULT IN A PERMANENT DAMAGE TO THE SERVICE CARD AND TO THE RECEIVER AS WELL.

8. Once that the download is complete a screen appears with the next instructions:
   a. Remove the SD card from the back of the TV set.
   b. Disconnect the power cable from the wall outlet.
   c. Reconnect the power cable to the wall outlet.
9. Press POWER on the receiver to turn ON.
10. Check the current software version of receiver by pressing on front panel the next sequence rapidly:

    VOLUME UP and MENU buttons at the same time, then CHANNEL UP and MENU buttons at the same time.

11. Press EXIT to clear the screen and go back to normal use mode.

17.17. JPEG Viewer Software Upgrade

1. With the receiver powered ON, insert the SD service card in the front panel slot, then automatically, a download menu will appear. If the download menu doesn't appear. Enter service mode, display the service menu by pressing POWER on the remote and select "JPEG" DAC register. Select option No. 6 with CH keys to acces the "JPEG Program Download" menu.

   NOTE:

   To abort the download process just press "EXIT" on remote in the "JPEG Program Download" menu.

   IMPORTANT:

   For better results in this procedure, be sure that the set is already powered ON and if the set is powered OFF, wait at least 10 seconds after turning ON the receiver before inserting the SD service card to the JPEG viewer slot.

2. Select the newest version of software with CH keys, then press OK.
3. A confirmation sign appears asking if the selected version wants to be downloaded, then with VOL keys select "YES" and press OK to start downloading.

   IMPORTANT!:

   ONCE THAT DOWNLOADING PROCESS HAS BEGUN IT CANNOT BE CANCELLED. DURING SOFTWARE DOWNLOADING DO NOT DISCONNECT THE AC PLUG FROM OUTLET!!, THIS COULD RESULT IN A PERMANENT DAMAGE TO THE SERVICE CARD AND TO THE RECEIVER AS WELL.

4. Once the downloading is finished, disconnect the AC plug from outlet then remove the SD service card from the slot.
5. Connect again the AC plug to the outlet and turn power ON.
6. Press both OK and POWER buttons on the receiver's front panel to acces to the self-check screen and wait a few seconds.
7. If the JPEG module is working accordingly, a "JPEG OK" sign will appear and within, the last upgrade version of the JPEG viewer software, i. e. "JPEG OK : 01.00.04" .
8. Press any key to exit the self-check screen or unplug AC cord to completely reset.

17.18. JPEG Factory and Service Mode (JPEG)

1. Enter service mode, and with the SD service card already inserted (JPEG viewer slot), from the service menu select "JPEG" DAC register.
2. A screen displaying the "JPEG Factory and Service Mode" menu will appear with 6 options and at the bottom the current JPEG software version.
3. To select one of the options press the CH keys on remote.
4. Option No. 1 will perform an auto test from option No. 2 trough No. 5.
   - SDRAM Test: will perform a test of the internal memory of the JPEG reader device, showing for a few seconds a green screen followed by a magenta screen. If the test is succesfull an OK flag will appear on menu.
   - Color bar Test: this will perform a color display test in the JPEG reader device showing in the screen a color rainbow bar pattern at the top and a black and white pattern at the bottom. If the colors are shown correctly the JPEG color driver is working properly. Press exit on remote to go back to service menu.
   - SD Card Test: this will perform a JPEG picture reading test on the SD Card. The SD card inserted must have

pictures with JPEG format to pass the test.

- PC Card Test: this will perform a JPEG picture reading test on the PC Card. The PC card inserted must have pictures with JPEG format to pass the test.
- Download: enters to the "JPEG Program Download" menu.

5. Press EXIT to go back to service mode.

17.19. CableCARD check

1. First check that receiver is operating out of service mode (normal use).
2. Insert the CableCARD (POD).
3. Check that the fan on the back of the set should be turned ON.

   IMPORTANT:

   If the fan is disconnected accidentaly or if the fan is damaged and it's not turned ON when the module is inserted, the PTV will automatically be set in protection mode and it will shut down. Connect again the fan correctly or replace it with a new one (for order number see parts list section) and press power to turn ON.
4. A sign on the screen with instructions should appear indicating that the CableCARD has been inserted.
5. Check the current software version of receiver by pressing on front panel the next sequence rapidly:

   VOLUME UP and MENU buttons at the same time, then CHANNEL UP and MENU buttons at the same time.
6. A status screen will appear displaying information about the System status.
7. The "System" information displays the current software version, release date, memory and POD status.
8. If the CableCARD is operating properly the POD status will indicate that the CableCARD is present. If the CableCARD is inserted and the POD status indicates that is not present, the CableCARD could be damaged.
9. To exit the system status screen, press exit.
10. Remove the CableCARD and check that a sign on the screen appears indicating that the card has been removed.

18 Convergence adjustment

Turn PTV on and allow it to warm up for 30 minutes prior to perform adjustments (apply a WHITE PATTERN).

Helpful Hint:

EEPROM jig can be used to adjust convergence, by copying convergence adjustment from a convergence adjusted PTV to other. Refer to EEPROM copy jig section on this service manual. Also EEPROM copy jig can be used to back-up the data before to perform adjustments.

NOTE:

1080i, 480p, 480i pattern can be obtained from Panasonic's TU-DST51 set-top box DTV decoder.

IMPORTANT NOTICE:

It is strongly recommended to first read and understand the following section prior to make any adjustment.

This PTV uses the scheme described below to correct for misconvergence of the three CRT projection tubes. There are various modes to this operation.

Preparation:

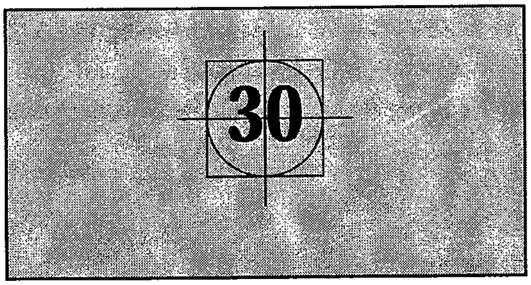
Place the convergence alignment template (see Convergence alignment template section on this manual) over the PTV screen. Align the center lines of the template with the mechanical center markers on the PTV screen frame. If the template is not available, create one using the dimensions provided in Convergence alignment template section on this manual.Remote control must be used during the procedure.

Procedure:

Apply the convergence alignment template to the PTV screen frame to converge the green raster only. Remove the convergence alignment template following this alignment. The red and blue rasters can then be aligned to the green raster.

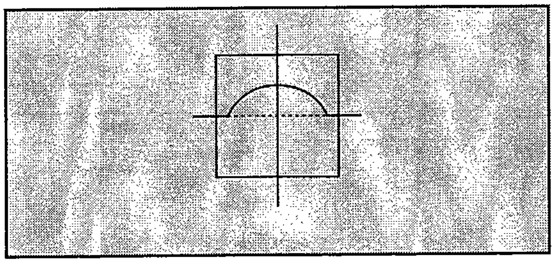
Raster Set-Up:

1. Enter to service mode (red CHK).
2. In SET-UP (menu) enter to "Other Adj." menu and set CONVERGENCE values (GH, GV) to 0.
3. Cover red & blue lens with caps.
4. Apply a pattern to adjust with 1080i format:
5. Select "COARSE" DAC, then press OK to enter to "Coarse adjustment" mode.
6. Press "0" key on remote.
7. Press OK key on remote to enter to "TEST_POS" mode.
8. Move pattern by pressing VOL right - left and CH up - down so that the cursor center overlap monoscope pattern center.



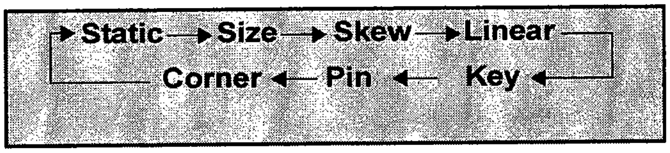
Aligned cross-hair pattern with center of picture pattern

9. Press "5" key on remote to exit superimpose mode (monoscope pattern disappear).
10. Press "TV/VIDEO" key to enter "DATA_POS" mode
11. Adjust by pressing VOL right - left so that peak of curve is the same position as center of cursor



Symmetrical shape

12. Press "TV/VIDEO" key on remote to enter "OSD_POS" mode.
13. Press "5" key on remote so that monoscope pattern appears (superimpose mode)
14. Move cursor by pressing VOL right - left and CH up - down so that cursor center overlap monoscope pattern center
15. Press "0" key to go back to "Coarse adjustment" mode.
16. Press "TV/VIDEO" key to cycle through "Coarse adjustment" options



"COARSE" modes cycle

17. To change to "Fine Adjustment Mode" options ("FINE" DAC), press "TV/VIDEO" key on remote for at least 3 seconds, to go back to "Coarse

    Adjustment Mode" options press "TV/VIDEO" on remote again for 3 seconds.
18. In "Fine Adjustment Mode" options, press "MUTE" key on remote to switch between "cursor" mode and "data" mode.
    - Cursor mode: Allows cursor movement by pressing VOL right - left and CH up - down.
    - Data mode: Allows making adjustment by pressing VOL right - left and CH up - down.
19. Either "Coarse Adjustment" options or "Fine Adjustment" options, press "R-TUNE" repeatedly key on remote to cycle through different color adjustments (R, G, B, White)
20. In "Fine Adjustment" options, press "4" key on remote to ADD crossed sections to pattern and make effect visible between crossed sections.
21. To store adjustments press "7", then "OK" key on remote, otherwise press "POWER" then "OK" to exit adjustments without saving.
22. Remote functions, PRESS:

PRESS BUTTON	TO
1(forward) or 3(back)	change viewed color
2	change pattern
4 (only FINE mode)	change crossed sections
5	overlap
* 7	save data
8	copy from
9	clear
POWER	exit
RECALL	display values
R-TUNE	cycle colors
TV/VIDEO	change mode
TV/VIDEO (3 secs)	switch convergence mode (FINE/COARSE)

*

When "7" is pressed and the data is saved, it will overwrite the factory default.

18.1. Coarse adjustment mode (COARS)

NOTE:

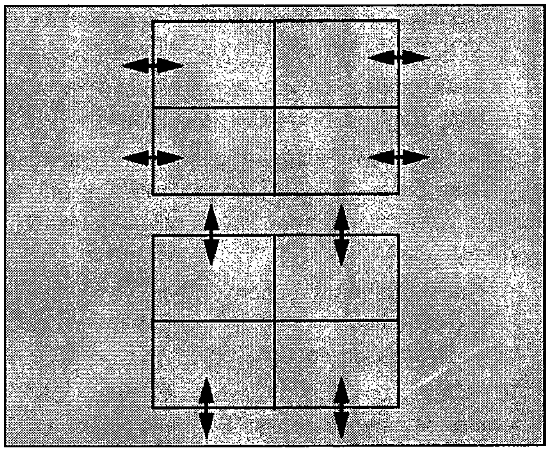
1080i, 480p, 480i pattern can be obtained from Panasonic's TU-DST51 set-top box DTV decoder.

NOTE:

It is strongly recommended to first read and understand the following section prior to make any adjustment.
Convergence adjustment must be performed for 480i_p (same for interlace & progressive), ZOOM 480i and 1080i.

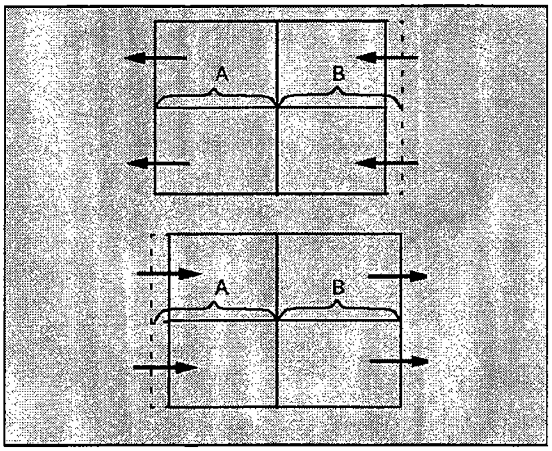
Procedure:

1. Enter to "G-SIZE" mode:
    - Select "COARSE" DAC
    - Press OK on remote
    - TV/VIDEO (repeatedly)
    - R-TUNE (repeatedly)
2. Press "2" repeatedly and apply the pattern of border and cross.
3. Press "RECALL" key to display values
4. Adjust size so that the line of the border closes to the screen frame at top, bottom, left and right, by pressing CH up-down and VOL right-left



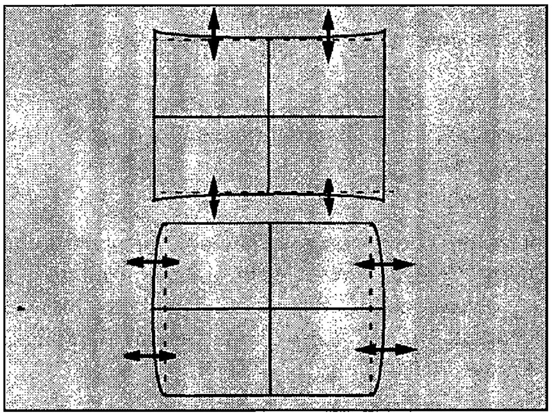
"SIZE" mode adjustment

5. Press "7" then "OK" key on remote to save changes.
6. Enter to linearity "G-LINEAR" mode by pressing "TV/VIDEO".
7. Adjust linearity by pressing VOL right-left until A=B.



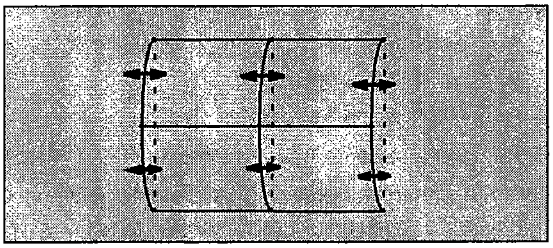
"LINEAR" mode adjustment

8. Press "7" then "OK" key on remote to save changes.
9. Enter to PIN "G-PIN" mode by pressing "TV/VIDEO"
10. Adjust V_PIN by pressing CH up-down (see figure)
11. Adjust H_PIN by pressing VOL right-left.
12. Press "7" then "OK" key on remote to save changes



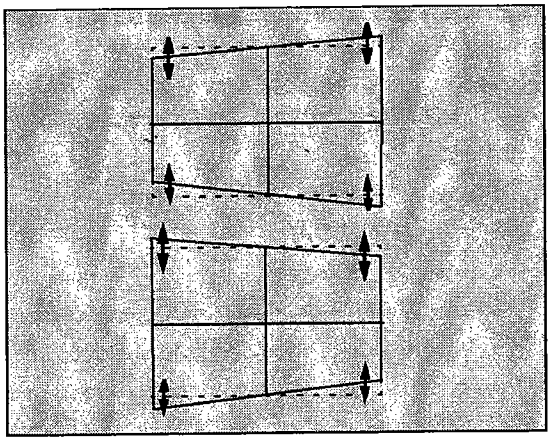
"PIN" mode adjustment

13. Press "7" then "OK" key on remote to save changes
14. Adjust by pressing VOL right-left (see figure)
15. Press "7" then "OK" key on remote to save changes



"CORNER" mode adjustment

16. Enter to KEY "G-KEY" mode by pressing TV/VIDEO.
17. Adjust by pressing CH up-down (see figure)
18. Press "7" then "OK" key on remote to save changes

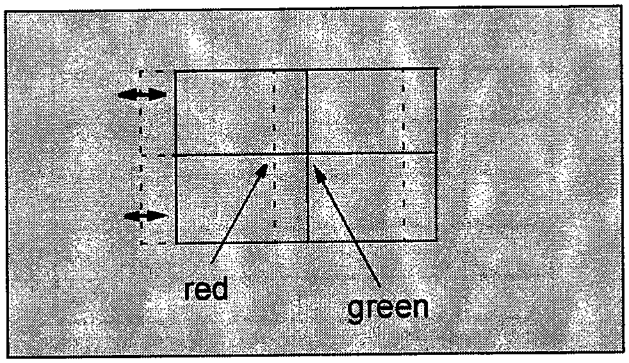


"KEY" mode adjustment

NOTE:

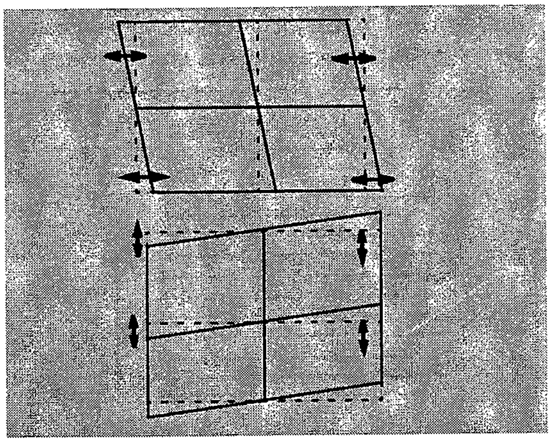
Confirm that pattern looks like a square and almost overlaps the screen frame, check that vertical and horizontal line center match with the marks on screen frame, if linearity is not good enough, repeat adjustments.

19. Enter to "STATIC" mode by pressing TV/VIDEO.
20. Press "1" or "3" repeatedly until green and red only are shown.
21. Adjust "R-STATIC" so that the center of red overlaps with the center of green



"STATIC" mode adjustment

22. Enter to SKEW "R-SKEW" mode by pressing TV/VIDEO
23. Adjust "R-SKEW" so that the vertical and horizontal line of center overlaps with green (see figure)
24. Press "7" then "OK" key on remote to save changes

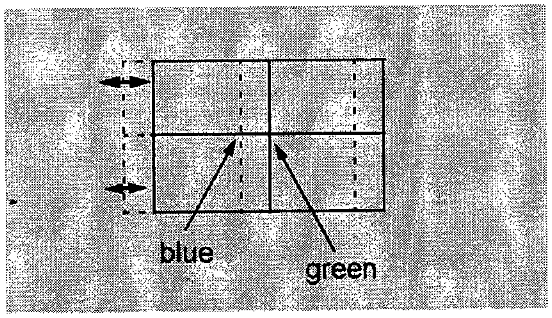


"SKEW" mode adjustment

NOTE:

Remember always save data following each adjustment by pressing "7" key on remote, then OK.

25. Enter to LINEARITY "R-LINEAR" mode by pressing TV/VIDEO.
26. Adjust Horizontal linearity (see figure)
27. Enter to SIZE "R-SIZE" mode by pressing TV/VIDEO.
28. Adjust so that the line on the border closes to the screen frame at top, bottom, left and right (see figure).
29. Enter to PIN "R-PIN" mode by pressing TV/VIDEO
30. Adjust horizontally and vertically (see figure)
31. Enter to CORNER "R-CORNER" mode by pressing TV/VIDEO.
32. Adjust corners (see figure).
33. Enter to KEY "R-KEY" mode by pressing TV/VIDEO
34. Adjust KEY (see figure).
35. Display pattern of border and cross, then check that red overlaps green pattern, if it is not satisfactory, repeat from step 19.
36. Enter to STATIC "B-STATIC" mode.
37. Press "1 or 3" key repeatedly on remote until only green and blue pattern are displayed.
38. Adjust B-STATIC so that the center of blue overlaps with the center of green (see figure).



"B-STATIC" mode adjustment

39. Perform all adjustments for blue (B-SKEW, B-LINEAR, B-SIZE, B-PIN, B-CORNER, B-KEY)
40. Display border and cross pattern and confirm that blue overlaps with green pattern, if it is not satisfactory, repeat for blue.
41. Press "1 or 3" key repeatedly on remote until green, red and blue (white), confirm that red and blue overlaps with green pattern.
42. Press "7" key on remote, then OK to save changes.
43. Press POWER then OK to exit adjustments or press TV/VIDEO for at least 3 seconds to change to Fine Adjustment Mode.

18.2. Fine adjustment mode (FINE) (convergence)

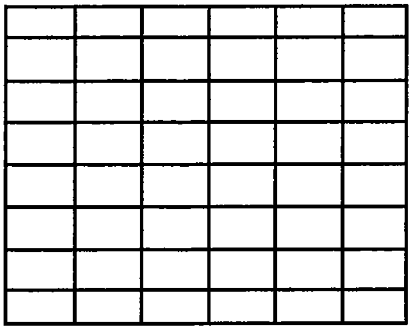
NOTE:

It is strongly recommended to first read and understand the following section prior to make any adjustment.

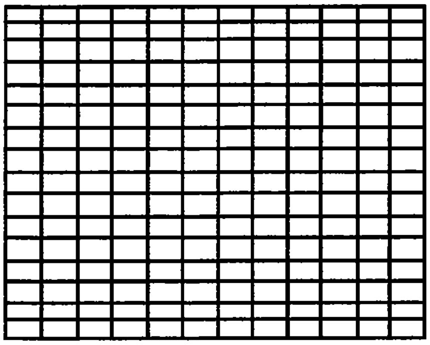
HELPFUL HINT:

The easiest way to adjust convergence is to start adjusting from the center of the screen to the borders in all the convergence adjustments.

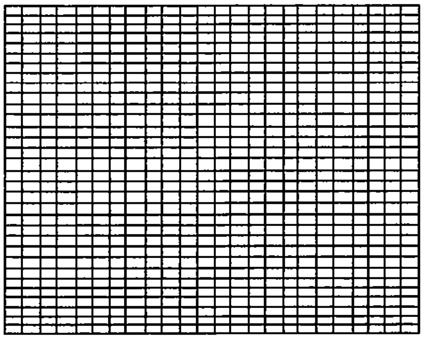
Once in "FINE" convergence mode press "4" on remote control frequently to change crossed sections, this helps to check convergence more accurate in more sections of the picture. Please see the following figures that show the cycle, this does not have any effect on the positions of the cursor.



"FINE" convergence mode default Grid



"FINE" convergence mode after pressing "4" on remote



"FINE" convergence mode after pressing "4" on remote

PRESS BUTTON	TO
1(go) or 3(back)	change color view
2	change pattern
4 (only FINE mode)	change crossed sections
5	overlap
* 7	save data
8	copy from
9	clear
POWER	exit
RECALL	display values
R-TUNE	cycle colors
TV/VIDEO	change mode
TV/VIDEO (3 secs)	switch convergence mode (FINE/COARSE)

*

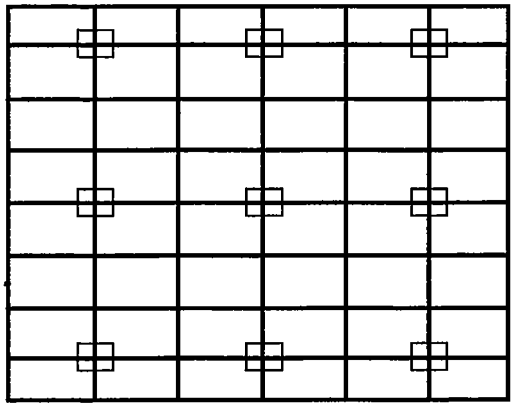
When "7" is pressed and the data is saved, it will overwrite the factory default.

In "FINE ADJUSTMENT MODE" options, press "MUTE" key on remote to switch between "cursor" mode and "data" mode.

- Cursor mode (cursor flashing): Allows cursor movement by pressing VOL right - left and CH up - down.
- Data mode (cursor fixed): Allows making adjustment by pressing VOL right - left and CH up - down.

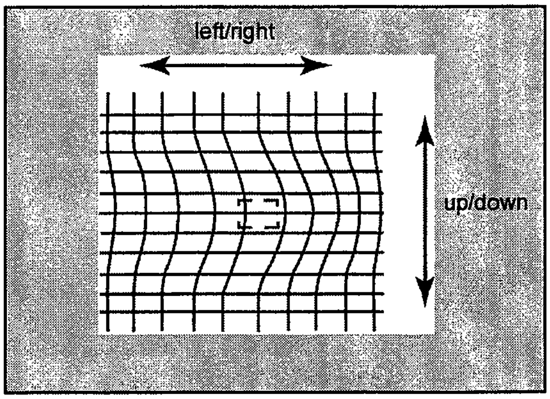
PROCEDURE:

1. To Enter to "G-EASY" mode (for green):
   - Select "FINE" DAC
   - Press OK on remote
   - Press TV/VIDEO (repeatedly) to select mode.
   - Press R-TUNE (repeatedly) to select color
2. Press "2" repeatedly and apply the pattern of crosshatch.
3. Press "4" frequently to change crossed sections, this helps to check convergence more accurate in more sections of the picture.
4. Press "1 or 3" repeatedly until the pattern becomes green.
5. Press RECALL to display values.
6. In "EASY" mode, the adjustment value changes by 4 steps
7. "EASY" mode allows to move lines horizontally and vertically from the center of cursor



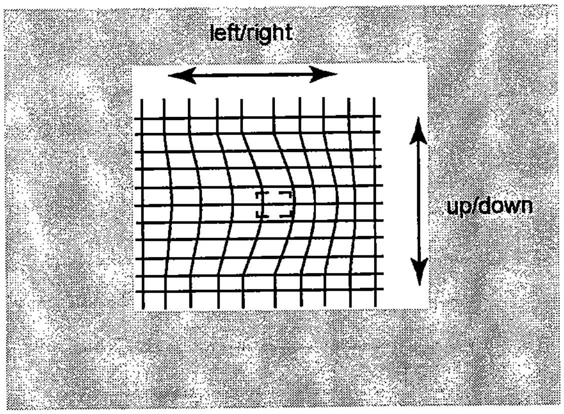
"EASY" mode adjustment, possible locations for cursor

8. This mode affects a wide area around the cursor than other adjustment modes, See values on screen by pressing RECALL on remote
9. Begin adjustment from the center to the edge of the screen.
10. Adjust when the cursor is not flashing by pressing CH up/down and VOL right/left on the remote control, if the cursor is flashing press MUTE on the remote



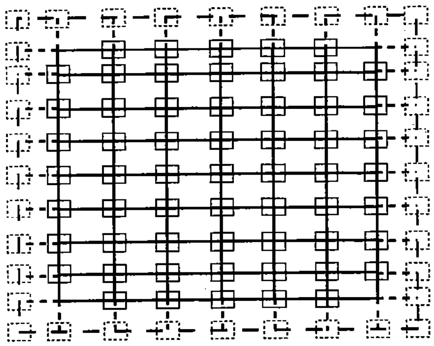
"EASY" mode adjustment

11. To move the cursor press MUTE on the remote (cursor flashes), then move the cursor to any of the positions for "EASY" mode
12. This adjustment may help to make rounded lines become straight lines.
13. Adjust to make lines as straight as possible
14. Enter to POINT "G-POINT" (for green) mode by pressing TV/VIDEO.
15. "POINT" mode allows to move line horizontally and vertically from the perimeter of cursor making rounded lines become straight
16. In "POINT" mode, the adjustment data changes by 2 steps, See values on screen by pressing RECALL on remote
17. When the cursor is located in the outer area of the border the cursor starts to flash from one side to other, the location is for the non-visible area and the most outer side of screen (inside the ovals area, see figure); This applies to "LINE", "POINT" & "ORIGIN. POINT" modes.
18. Begin adjustment from the center to the edge of the screen



"POINT" & "ORIG. POINT" mode adjustment

19. Adjust to make lines as much straight as possible
20. When slightly adjustment is needed, use "ORIG. POINT" mode.
21. To enter to "G-ORIG. POINT" (for green) mode press TV/VIDEO.
22. With "ORIG. POINT", the adjustment data changes by 1 step, this allows more detail in the adjustment. Display values on screen by pressing RECALL on remote
23. Confirm that green adjustment is good enough, if adjustment is not satisfactory, repeat adjustments.
24. Enter to LINE "G-LINE" mode by pressing TV/VIDEO.
25. LINE mode allows to move each single line horizontally and vertically (see figure)
26. Begin adjustment from the center to the edge of the screen (see figure)
27. Adjust to make distribute lines

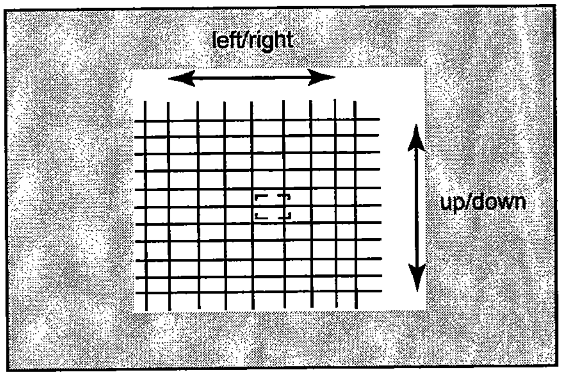


LINE, POINT, ORIG. POINT modes, possible locations for cursor

28. Then press "1 or 3" on the remote until red and green appears.

NOTE:

Since convergence adjustment will not allow to adjust every single cross section of the grid, it is very important to adjust, so that overall looks best, in "FINE" mode press "4" frequently on remote control to cycle crosshatch pattern to verify convergence.

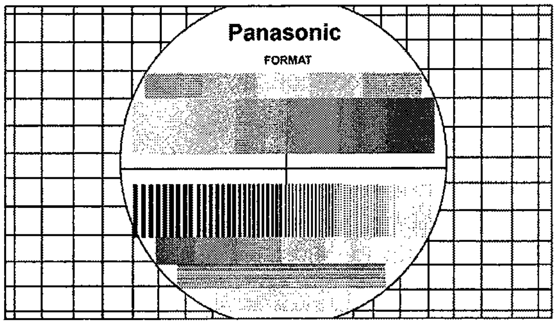


"LINE" mode adjustment

29. Perform adjustments for red so that red overlaps green, do not move green.
30. Press "1 or 3" on the remote until yellow (red and green) and blue appears, do not move green or red.
31. Perform adjustments so that blue overlaps Yellow (red and green).
32. Press "1 or 3" key on remote to display red, green and blue (white).
33. At this point the crosshatch pattern should look white.
34. If the crosshatch pattern is not only white, repeat adjustment for that specific color (red or blue).
35. Once the crosshatch pattern looks only white, perform the adjustments for White only ("POINT", "ORIG. POINT" & "LINE"), notice that each adjustment must be only for white (red, green, blue)
36. Adjust white for a good line distribution and make lines completely straight.
37. Press "7" key on remote, then OK to save changes.
38. Press POWER then OK to exit convergence adjustments (DACs menu appears).

18.3. Horizontal and vertical size check

1. Apply a pattern that permits to check that horizontal and vertical proportion of the image is correct
2. Confirm that horizontal and vertical center of the picture is located in the center of the screen.
3. Check that the image is proportional horizontally and vertically, proportion is different on every aspect.



18.4. Convergence alignment template

The convergence alignment template is a grid approximately the size of the viewing screen used to ensure the proper size and shape of the alignment rasters. It is 6 blocks across by 8 blocks high. The grid dimensions vary with the mode of operation.Apply a convergence alignment template to the viewing screen of the PTV. Make sure the center lines are properly aligned. If a template is not available, one can be created by following the instructions below.Create a convergence alignment template by drawing a pattern, as in the figure, in the actual dimensions on transparent film or tracing paper. Start with the Horizontal and Vertical Center Axis and work outwards until the pattern is complete. Pay attention to the actual dimensions of the pattern.

Template dimensions:

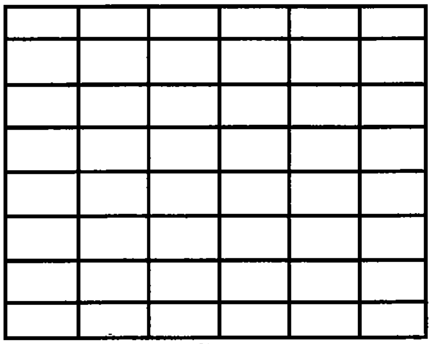
- 47" Models: 1036mm horizontal x 584mm vertical.
- 53" Models: 1036mm horizontal x 584mm vertical.

Grid dimensions:

SCREEN	MODE	HORIZONTAL	VERTICAL
47"	1080i	40.00 mm	20.80 mm
53"	1080i	46.60 mm	23.10 mm

NOTE:

A convergence alignment template, part number TXFQD01ESER2 for 47" and TXFQD01FSER1 for 53" is available through Matsushita/Panasonic Services

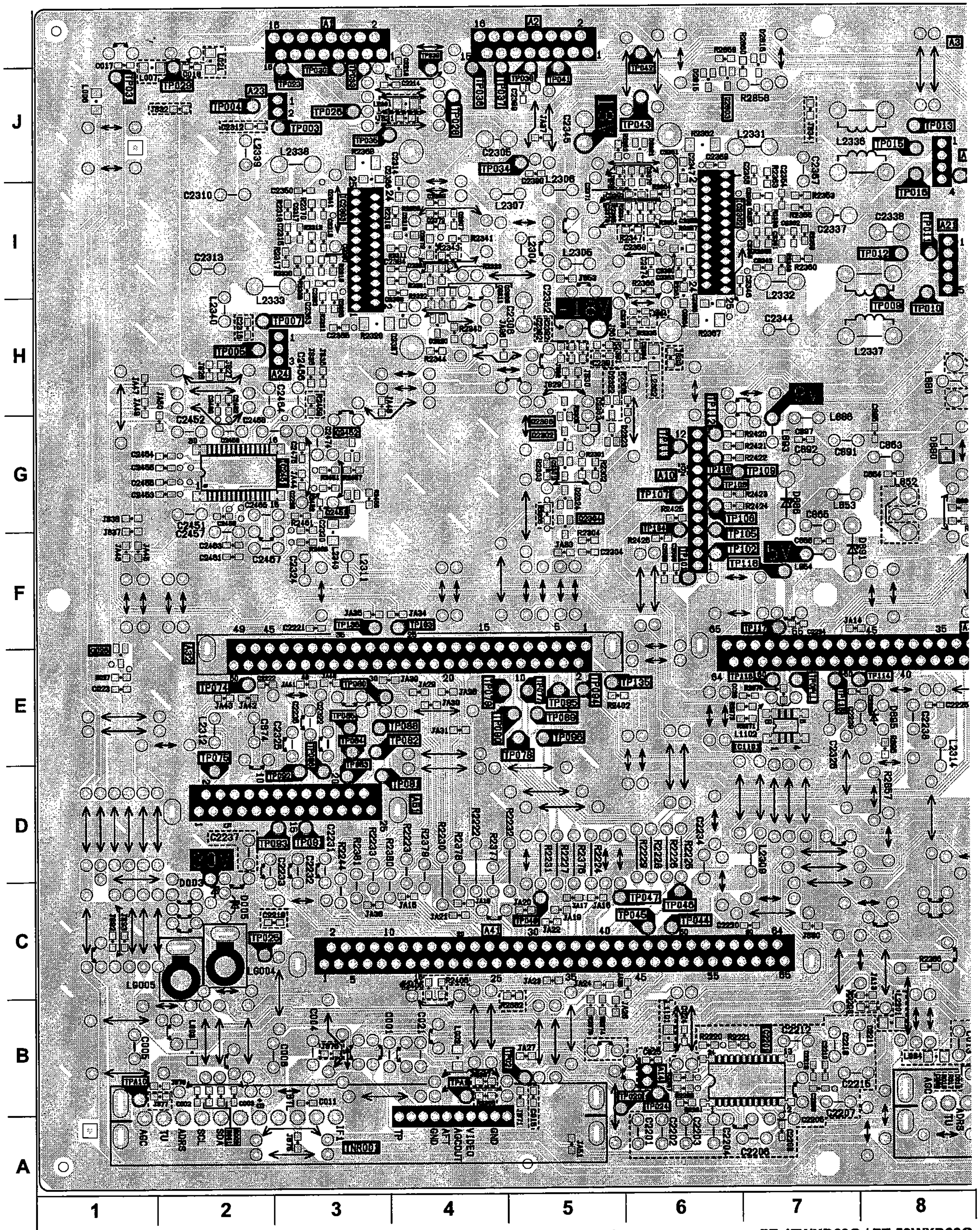


19 Reference of PDF links color

DESCRIPTION OF PDF LINK COLORS	
TYPE	**DESTINATION**
SCHEMATIC	
YELLOW ON IC	IC ON PCB
YELLOW ON CONNECTOR	CONNECTOR ON PCB
YELLOW ON SCHEMATIC	PCB
CYAN	WAVEFORM
GREEN ON SIDE	SCHEMATIC CONTINUED
GREEN ON CONNECTOR	CONNECTOR CONNECTION
BLUE ON IC	VOLTAGE
PCB	
BLUE ON IC	IC ON SCHEMATIC
BLUE ON CONNECTOR	CONNECTOR ON SCHEMATIC
BLUE ON PCB	SCHEMATIC
GREEN ON SIDE	PCB CONTINUED
BLOCK DIAGRAMS	
GREEN ON IC	IC ON SCHEMATIC
GREEN ON SIDE	BLOCK DIAGRAM CONTINUED

20 Conductor views

20.1. A-Board Printed Circuit (page 1 of 2)


J
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A12
A21
A23
A24
A32
A41
L2331
L2336
L2337
L2338
L2332
L2333
L2306
L2307
C2310
C2313
C2305
C2337
C2338
C2344
C2452
C2457
C2467
C2237
R2856
L6004
L6005
TP003
TP004
TP007
TP013
TP015
TP016
TP034
TP043
TP075
TP083
TP084
TP093
TP099
TP102
TP105
TP106
TP107
TP109
TP116
TP135
TNH001
ADC
TU
ADRS
SCL
SDA
VIDEO
AGCOUT
AFT
GND
TP

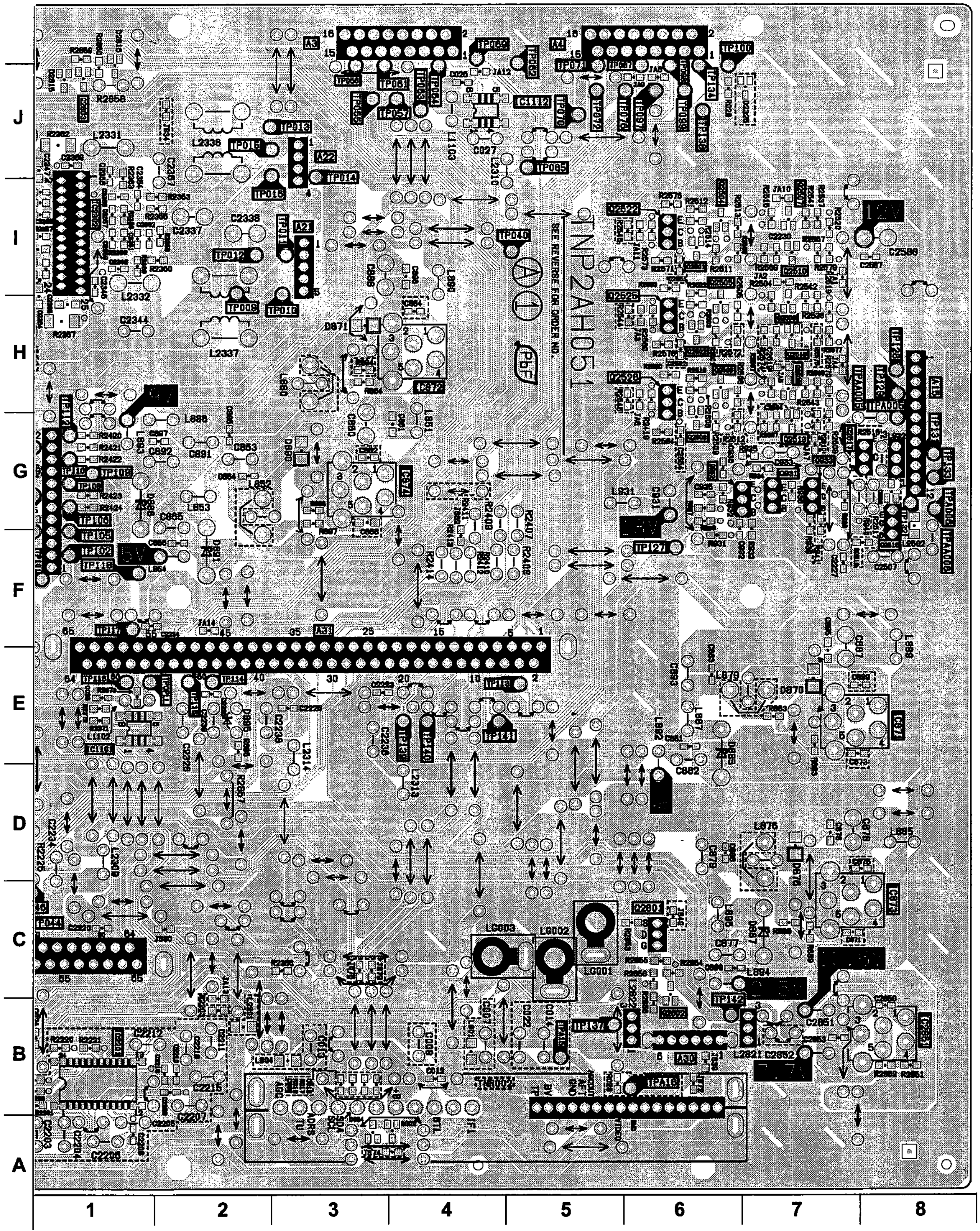
A-BOARD

1 of 2

TNP2AH051

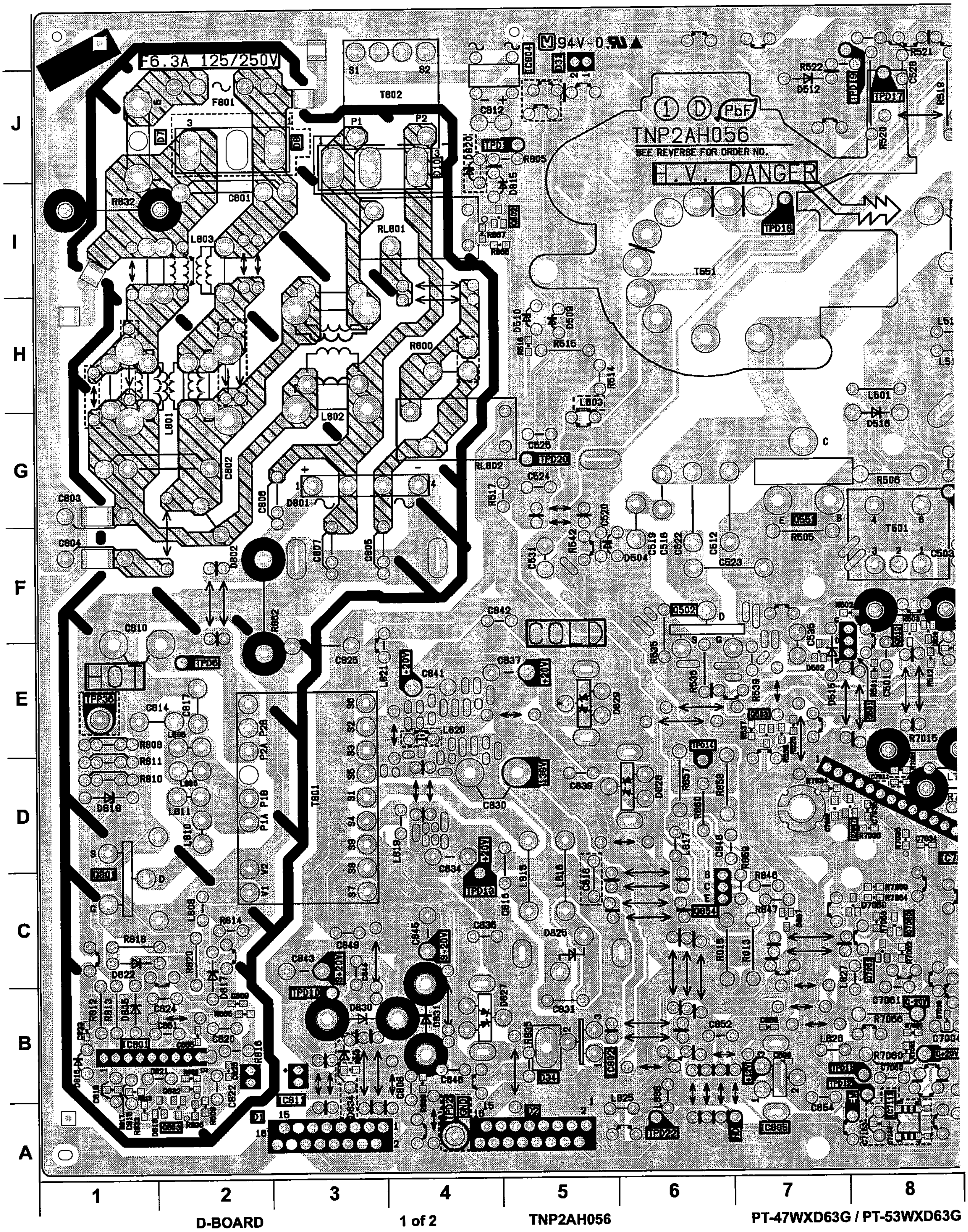
PT-47WXD63G / PT-53WXD63G

20.2. A-Board Printed Circuit (page 2 of 2)

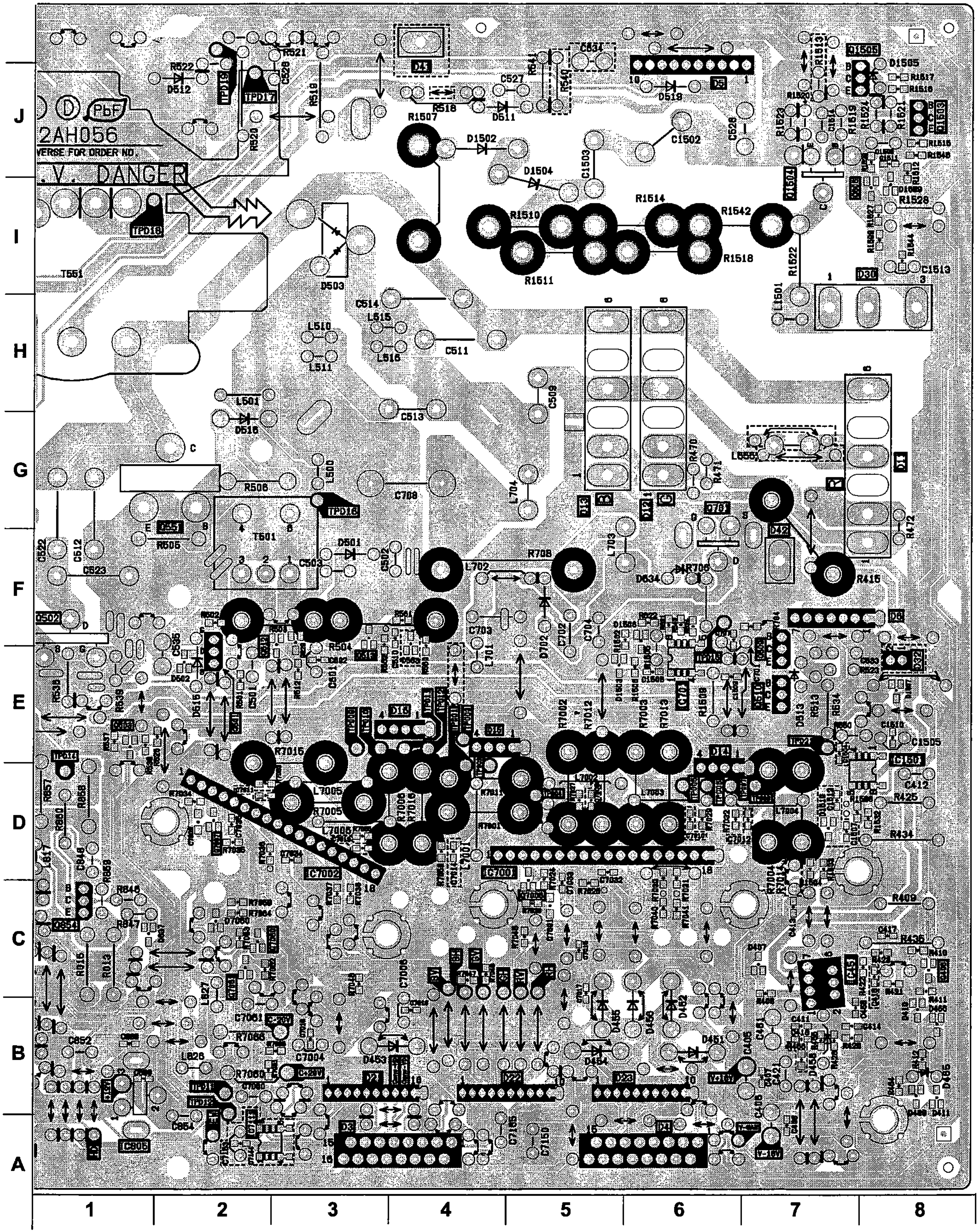

J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
TNP2AH051
SEE REVERSE FOR ORDER NO.
A3
A4
A2
A22
A31
A11
A30
TP127
TP142
TP137
TP141
L2331
L2336
L2332
L2337
C2337
C2338
C2344
LG003
LG002
LG001
Q2801
Q2522
Q2525
Q2528
L894
L885
L876
L879
L931
C882
C877

A-BOARD 2 of 2 TNP2AH051 PT-47WXD63G / PT-53WXD63G

20.3. D-Board Printed Circuit (page 1 of 2)


F6.3A 125/250V
94V-0
TNP2AH056
SEE REVERSE FOR ORDER NO.
① D PbF
H.V. DANGER
COLD
HOT
F801
T802
S1
S2
P1
P2
C801
R832
L803
RL801
R800
L802
L801
C802
D801
C803
C804
C806
C807
C805
D802
R802
C810
C825
TPD8
TPP36
C814
C817
R808
R811
R810
D818
L811
L810
T801
P2B
P2A
P1B
P1A
V1
V2
S2
S3
S5
S1
S4
S9
S8
S7
L821
L820
L819
C841
C837
C830
C834
C839
TPD13
TPD10
C843
C849
C845
C836
C831
C846
D830
D831
D827
D826
D828
D829
IC801
IC881
IC802
IC805
TPD22
L825
L826
T551
T501
R505
R506
R516
R517
C520
C524
C526
C519
C518
C522
C512
C523
C531
D502
D504
D505
D510
D512
D515
D516
L501
L503
R514
R515
R520
R521
R522
C528
TPD17
TPD18
TPD19
TPD20
RL802
C812
C842
C852
C854
R846
R847
R858
R857
R869
R815
R813
R814
R816
R818
R820
R812
D817
D822
C820
C821
C824
C822
R7015
R7056
C7061
L827
A
B
C
D
E
F
G
H
I
J
1
2
3
4
5
6
7
8
D-BOARD
1 of 2
TNP2AH056
PT-47WXD63G / PT-53WXD63G

20.4. D-Board Printed Circuit (page 2 of 2)


J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
2AH056
PbF
VERSE FOR ORDER NO.
.V. DANGER
TPD16
TPD17
TPD18
T551
R522
D512
R521
C528
R519
R520
D4
R518
C527
D511
R541
R540
C531
D5
D519
R1507
D1502
D1504
C1503
C1502
C526
D1505
R1517
R1516
R1513
R1520
R1523
R1524
R1519
R1521
D1501
D1504
R1528
R1514
R1510
R1542
R1511
R1518
R1522
L1501
D30
C1513
D503
C514
L515
L516
L510
L511
C511
L501
D516
C513
C509
R470
R471
L555
D1
R506
L500
C709
L704
TPD15
D13
D12
Q701
D42
R472
Q551
R505
T501
D501
C503
C502
C522
C512
C523
L702
R708
L703
D634
R706
R415
Q502
C536
D502
R504
C501
C703
L701
C704
D702
C702
D6
D3
R7002
R7012
R7003
R7013
R7015
R7005
R7006
R7016
L7005
L7004
L7003
L7002
IC7002
IC7001
L7001
IC1501
C412
R425
R434
R409
Q417
R436
IC451
R657
R650
R658
L617
C846
R859
R846
R847
Q854
R816
R813
L827
C7051
R7066
C7004
R7060
D453
D21
D22
D23
D3
D4
C852
L826
C854
IC805
C7150
C7155
D455
D456
D452
D451
D454
C405
C481
C421
D458
D465
R444
D411
D488

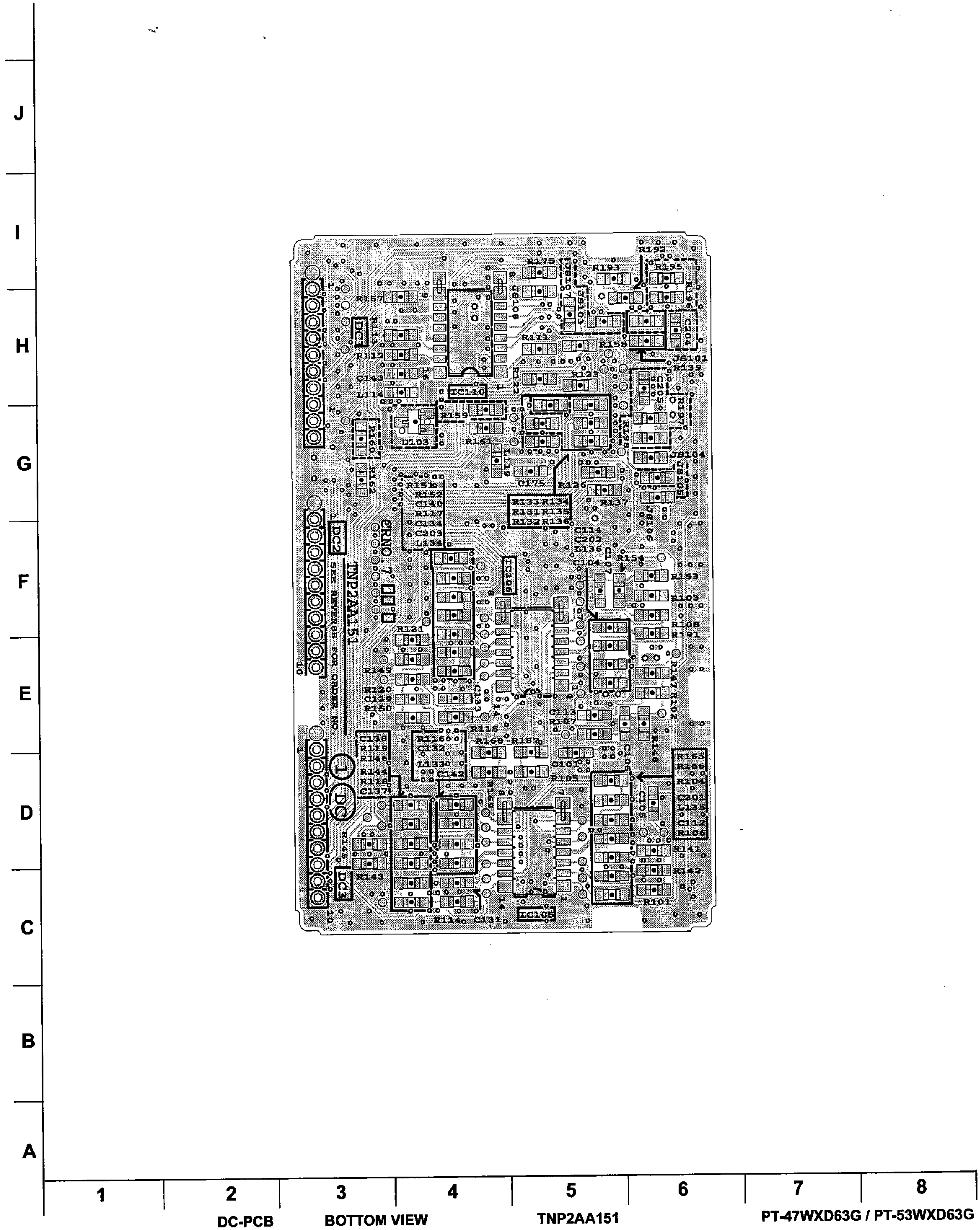
D-BOARD

2 of 2

TNP2AH056

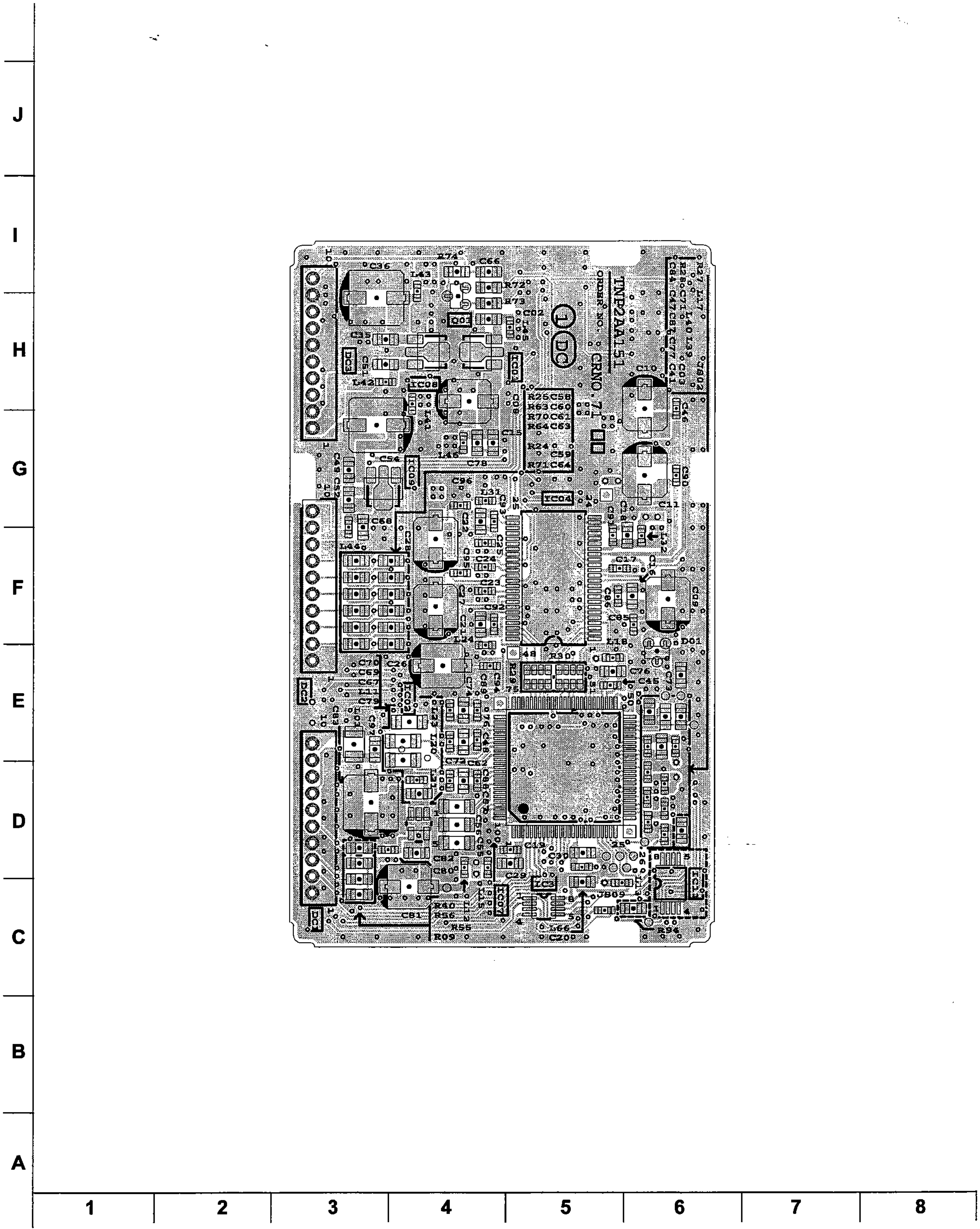
PT-47WXD63G / PT-53WXD63G

20.5. DC-Board Printed Circuit (bottom view)


J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
TNP2AA151
SEE REVERSE FOR ORDER NO.
DC1
DC2
DC3
DC
IC110
IC106
IC105
D103
R175
R193
R192
R195
R157
R113
R112
C143
L114
R159
R161
R160
R162
R111
R158
R133
JS101
R139
R196
C204
JS104
C175
R126
R137
R133 R134
R131 R135
R132 R136
C114
C202
L136
C104
R154
R153
R103
R108
R191
R147
R102
R121
R149
R120
C139
R150
R115
R116
C132
L133
C142
R168
R157
C113
R107
C101
R105
R148
R165
R166
R104
C201
L135
C112
R106
R141
R142
R101
C138
R119
R146
R144
R118
C137
R145
R143
R114
C131
R151
R152
C140
R117
C134
C203
L134

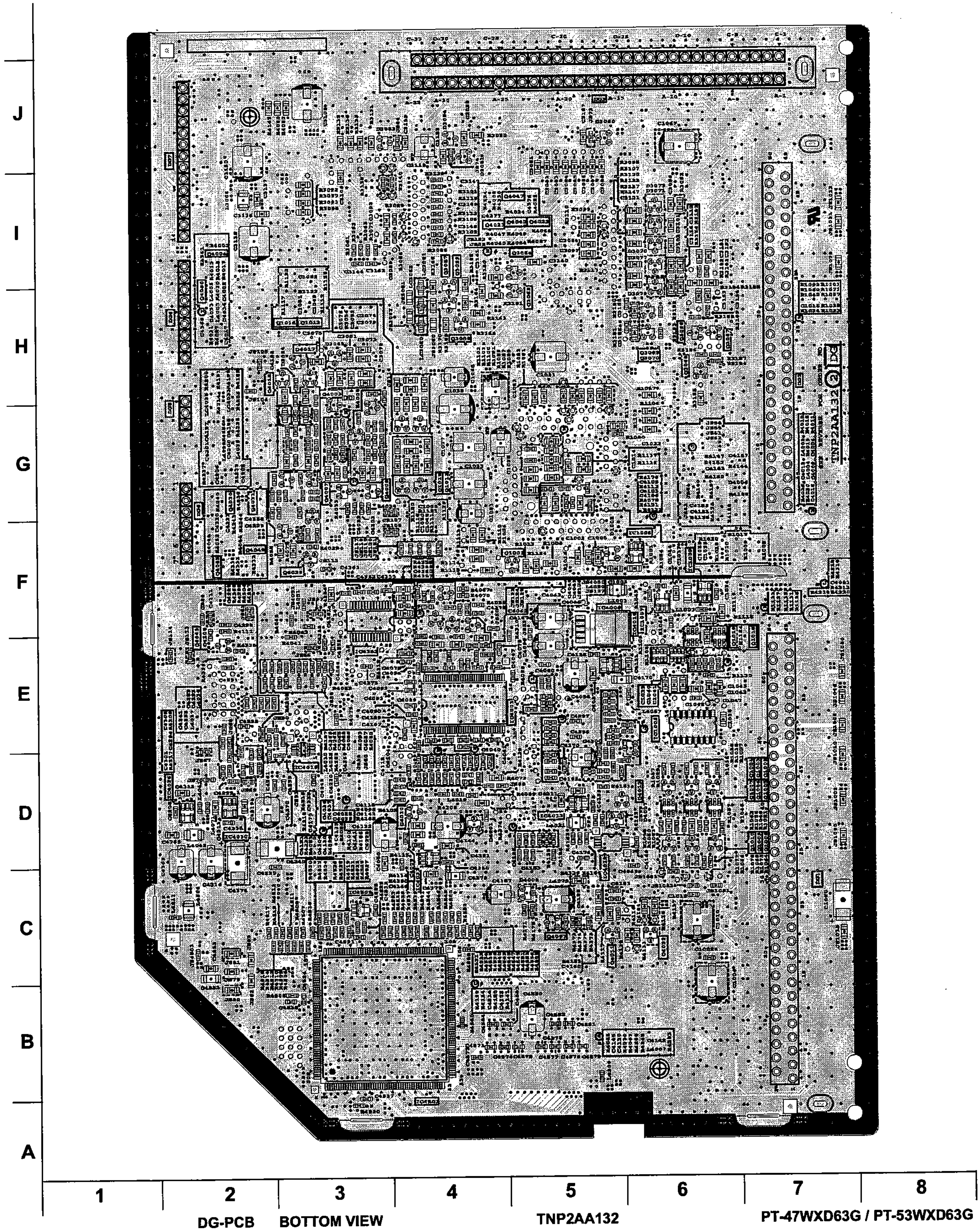
DC-PCB BOTTOM VIEW TNP2AA151 PT-47WXD63G / PT-53WXD63G

20.6. DC-Board Printed Circuit (top view)


J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
TNP2AA151
ORDER NO. CRNO.71
DC
IC01
IC04
IC08
C36
C66
R74
R72
R73
L43
L42
C35
C10
C11
C90
C78
C54
R25
R63
R70
R64
R24
R71
C58
C60
C61
C53
C59
C64
L44
L31
C96
R30
C81
R40
R56
R55
R09
R94
C20
L66
JB09
D01
L18
C17
C76
C45
C70
C69
C67
C79
C83
C80
C82
C72
C62
C29
C13
C30

DC-PCB TOP VIEW TNP2AA151 PT-47WXD63G / PT-53WXD63G

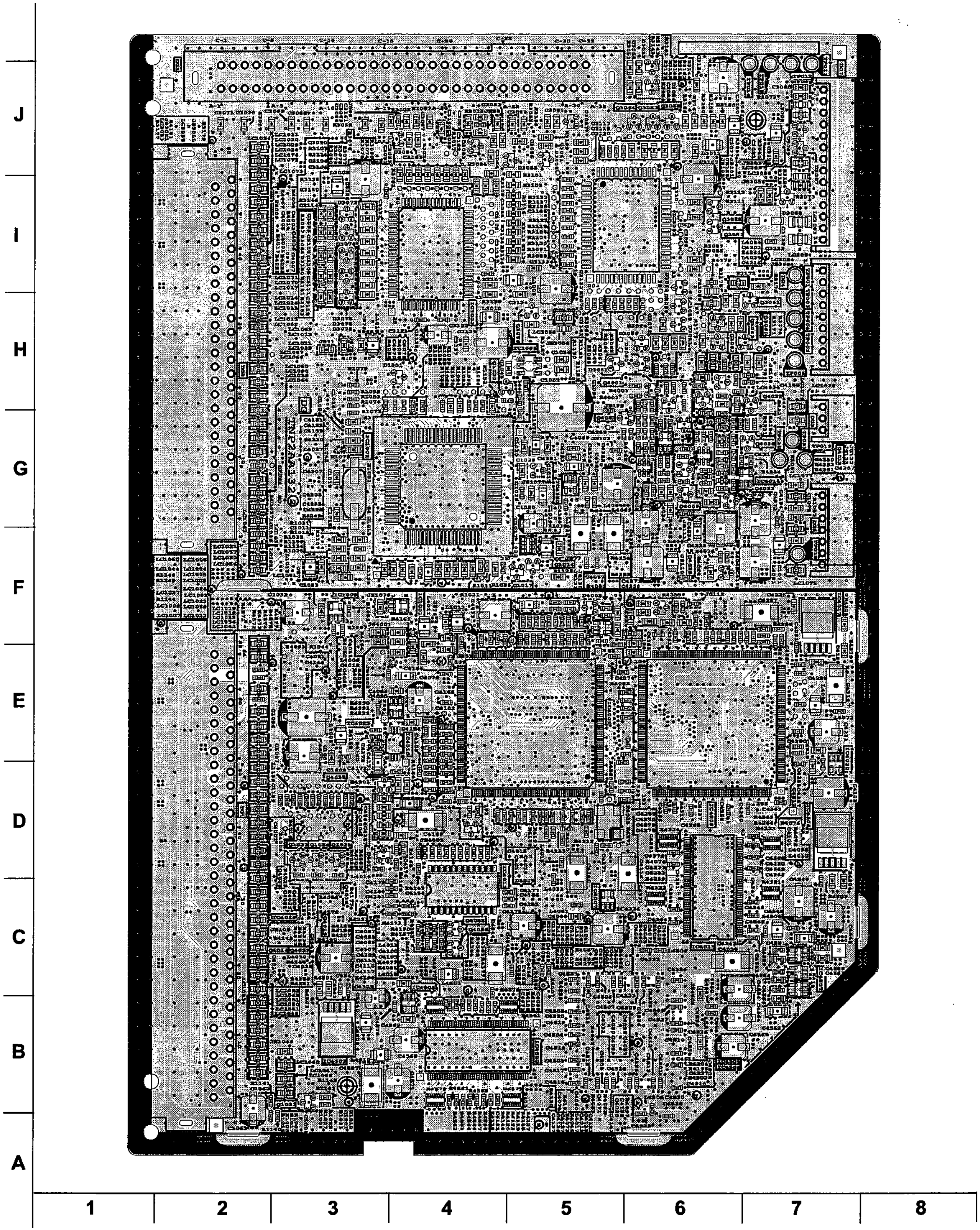
20.7. DG-Board Printed Circuit (bottom view)



J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
TNP2AA132

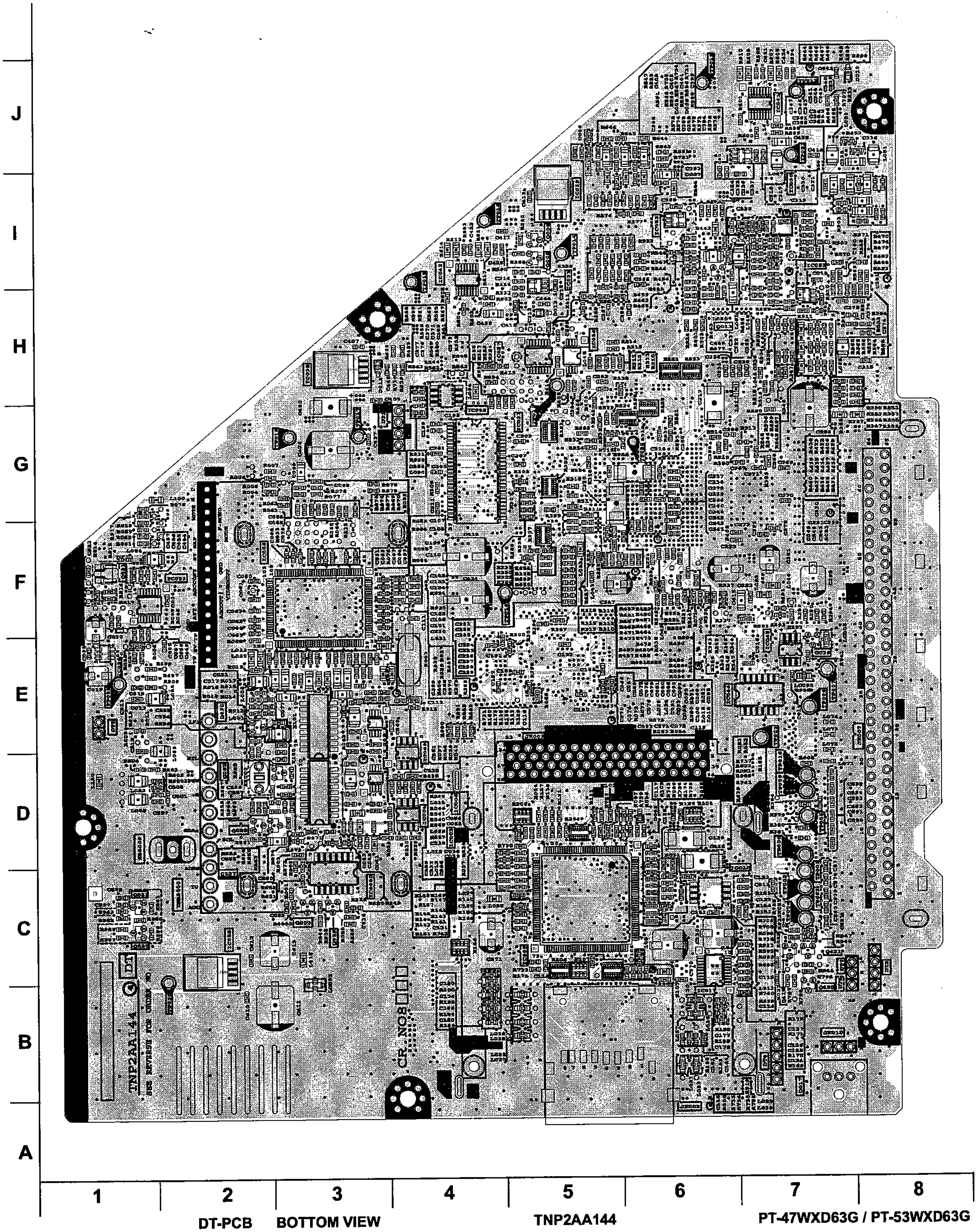
DG-PCB BOTTOM VIEW TNP2AA132 PT-47WXD63G / PT-53WXD63G

20.8. DG-Board Printed Circuit (top view)


J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
TNP2AA132

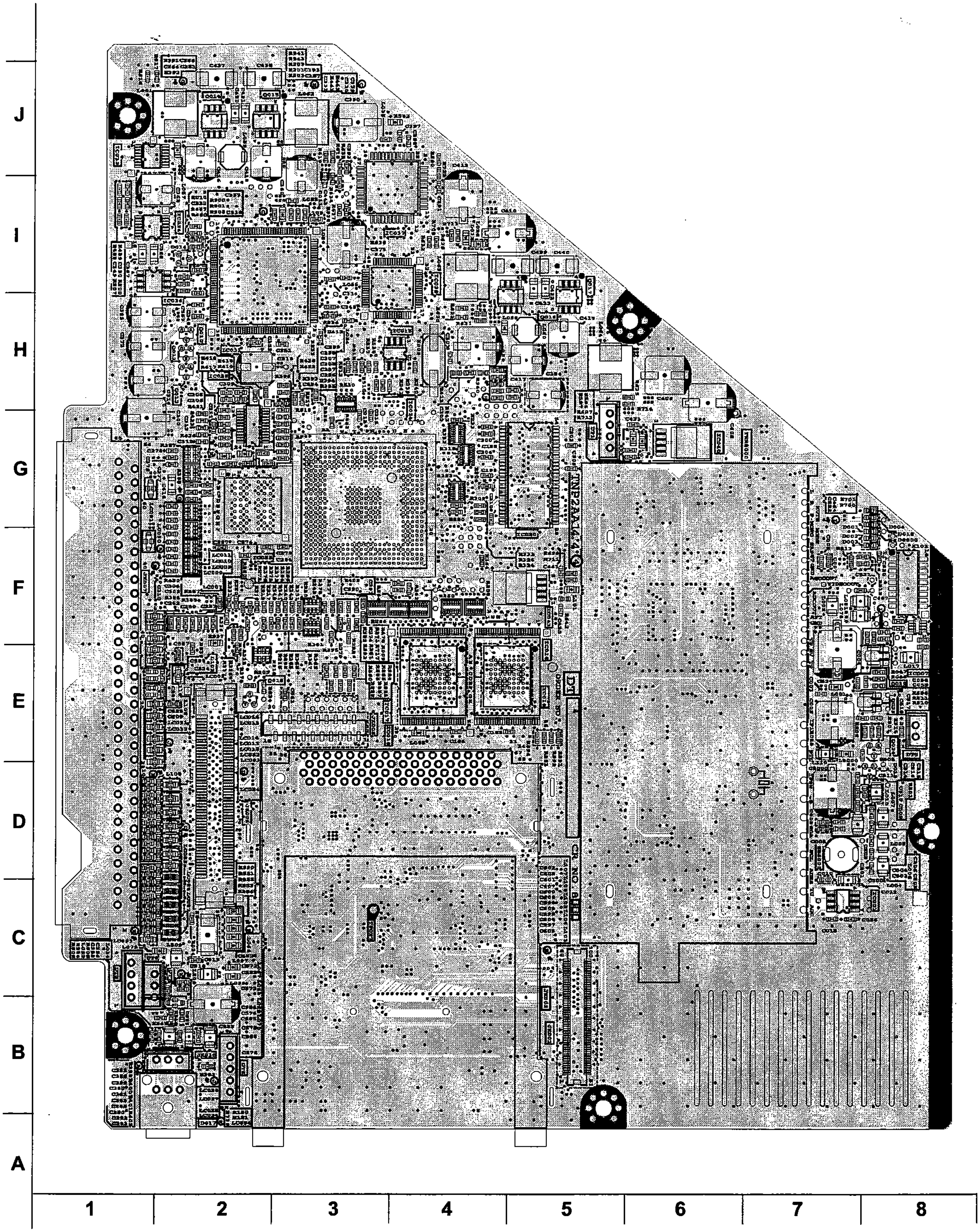
DG-PCB TOP VIEW TNP2AA132 PT-47WXD63G / PT-53WXD63G

20.9. DT-Board Printed Circuit (bottom view)


J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
TNP2AA144
CR NO8

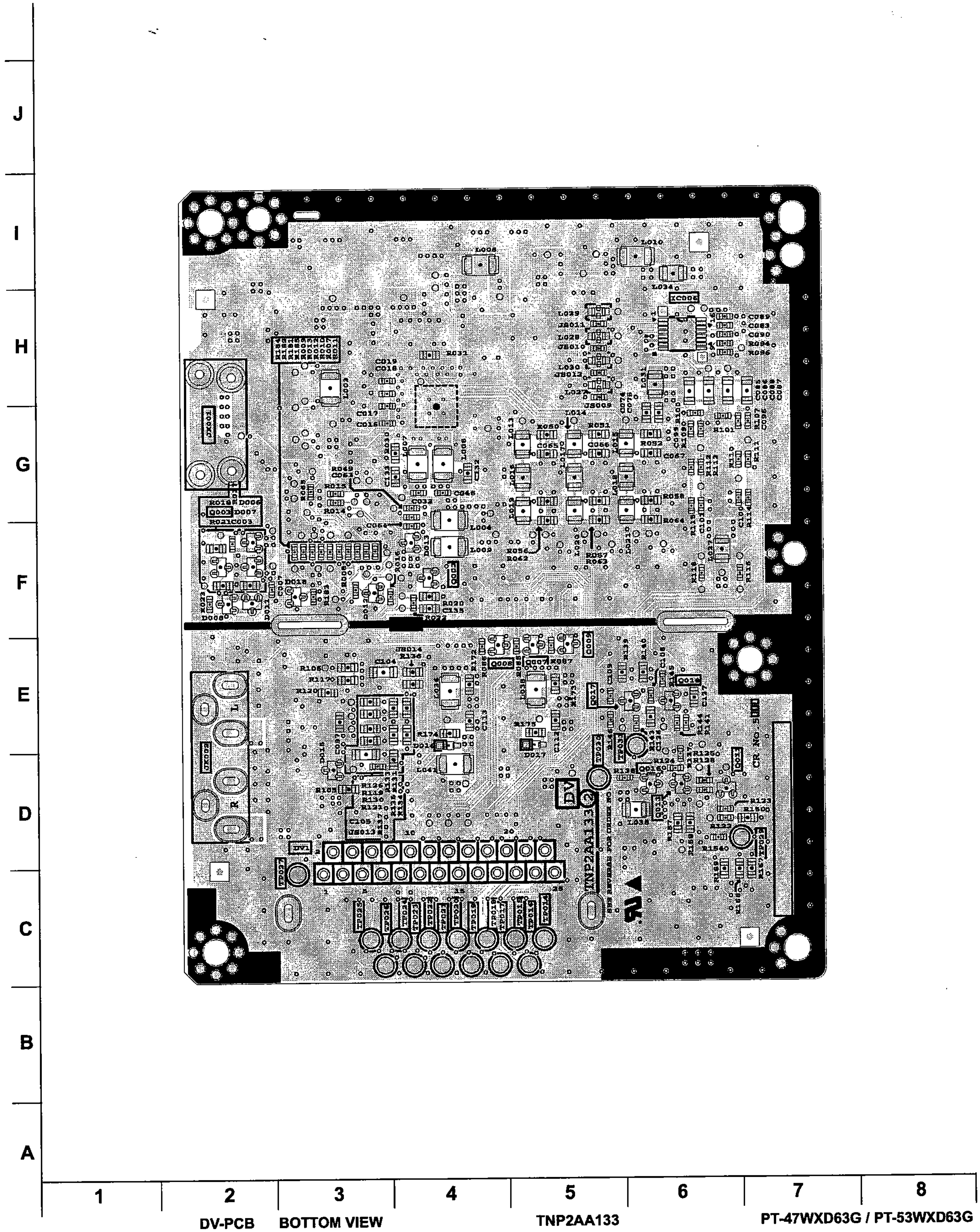
DT-PCB BOTTOM VIEW TNP2AA144 PT-47WXD63G / PT-53WXD63G

20.10. DT-Board Printed Circuit (top view)


J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
TNP2AA144

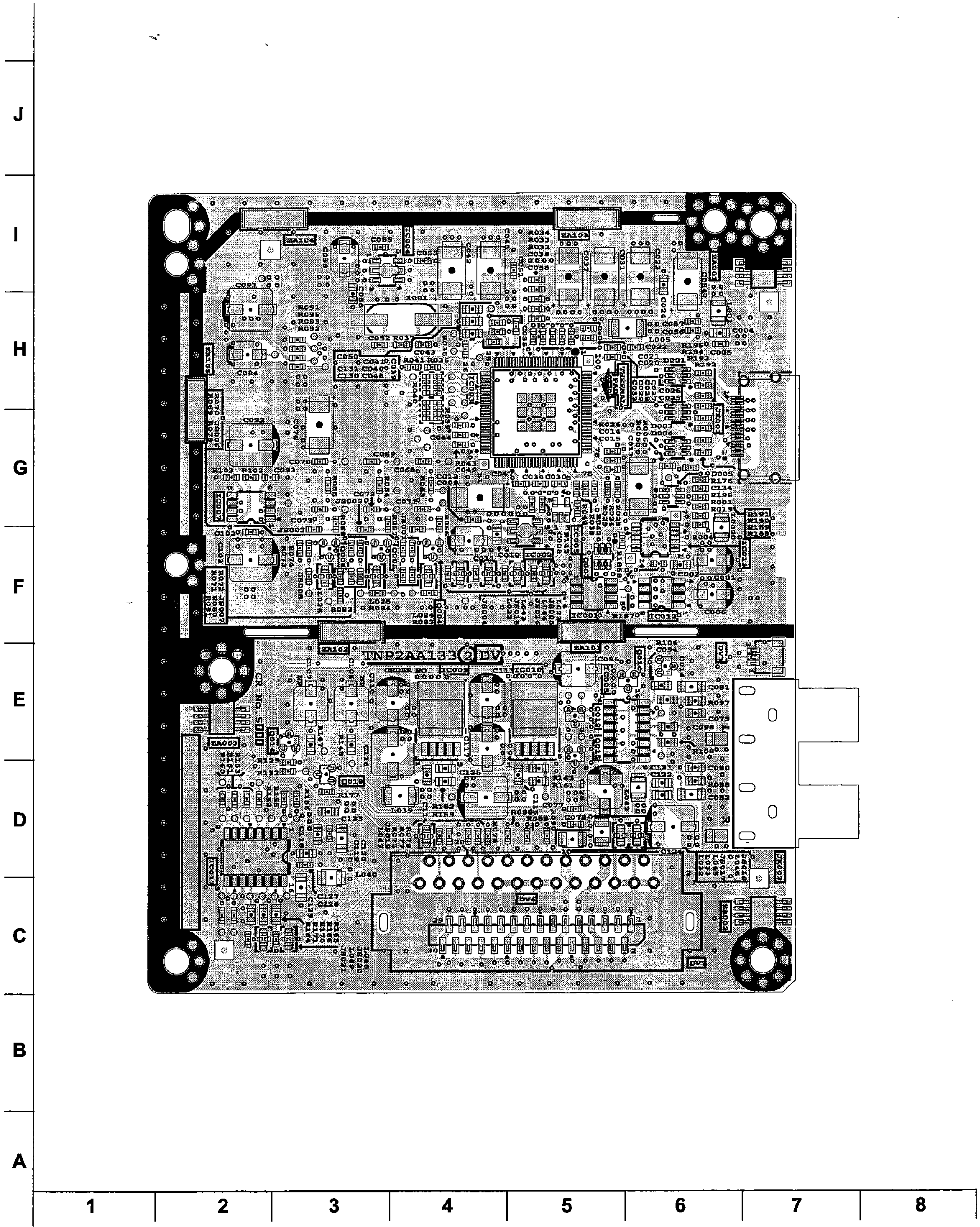
DT-PCB TOP VIEW TNP2AA144 PT-47WXD63G / PT-53WXD63G

20.11. DV-Board Printed Circuit (bottom view)


J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
TNP2AA133
DV

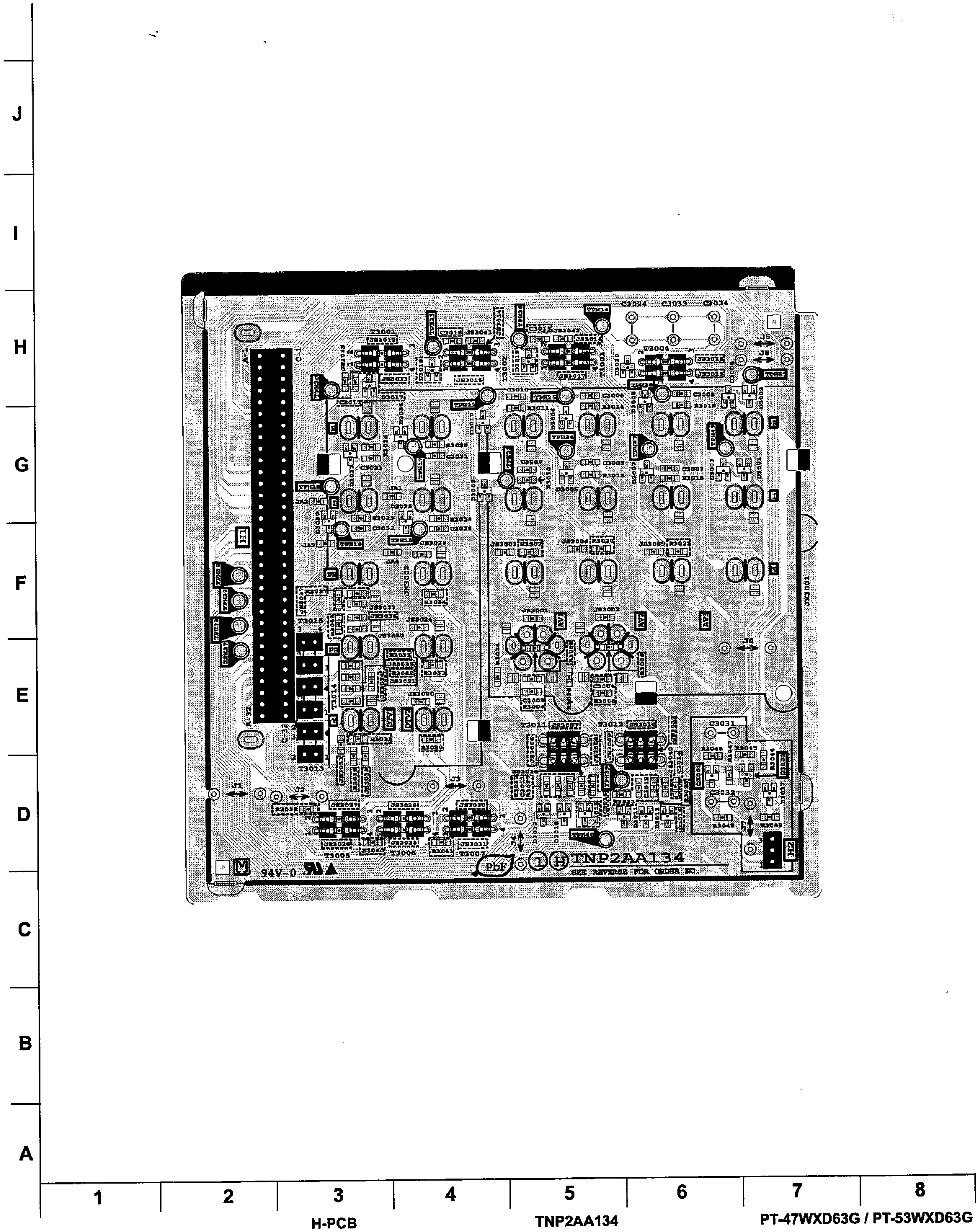
DV-PCB BOTTOM VIEW TNP2AA133 PT-47WXD63G / PT-53WXD63G

20.12. DV-Board Printed Circuit (top view)


J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
TNP2AA133 2 DV

DV-PCB TOP VIEW TNP2AA133 PT-47WXD63G / PT-53WXD63G

20.13. H-Board Printed Circuit

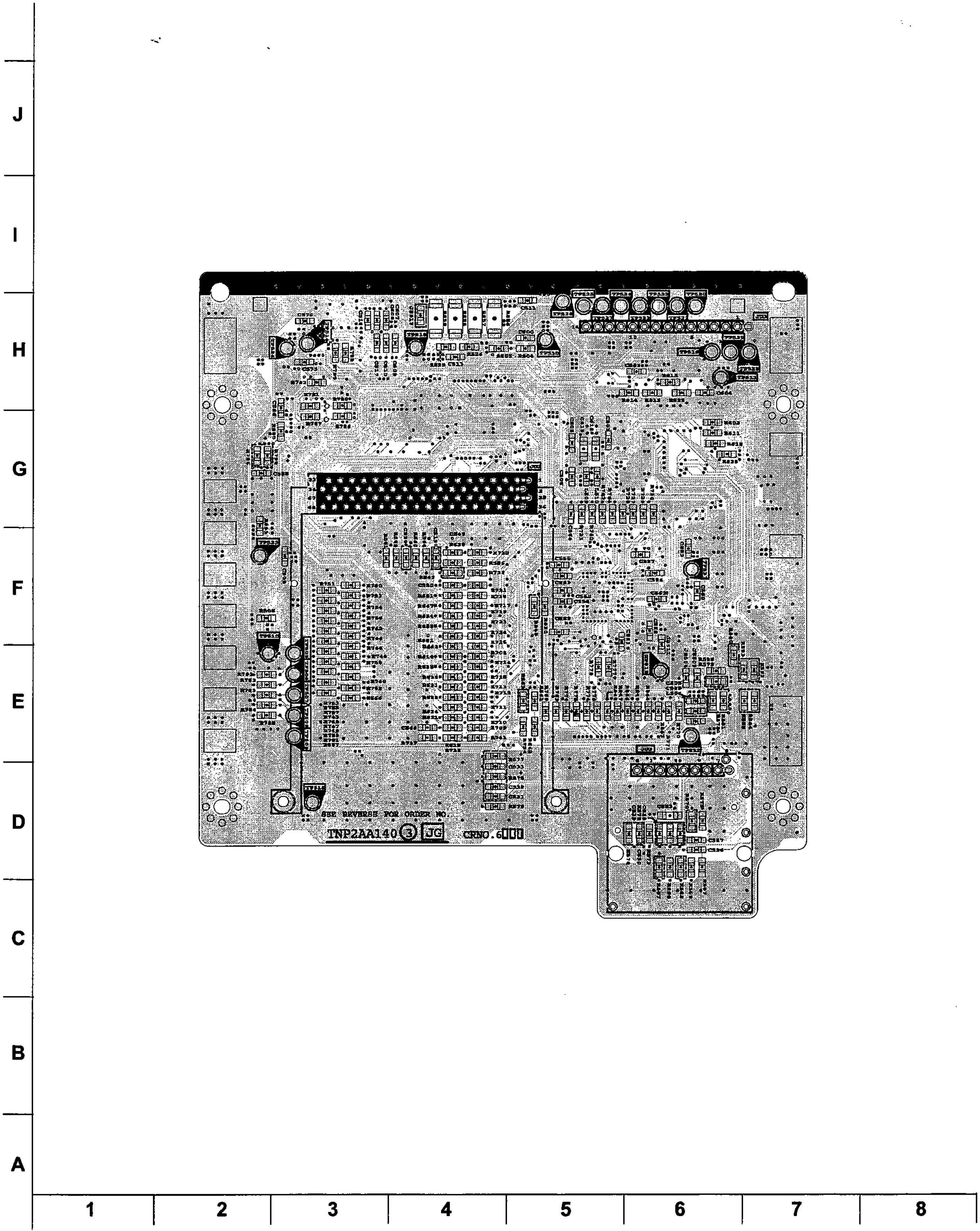

J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
TNP2AA134
SEE REVERSE FOR ORDER NO.
94V-0
PbF
H

H-PCB

TNP2AA134

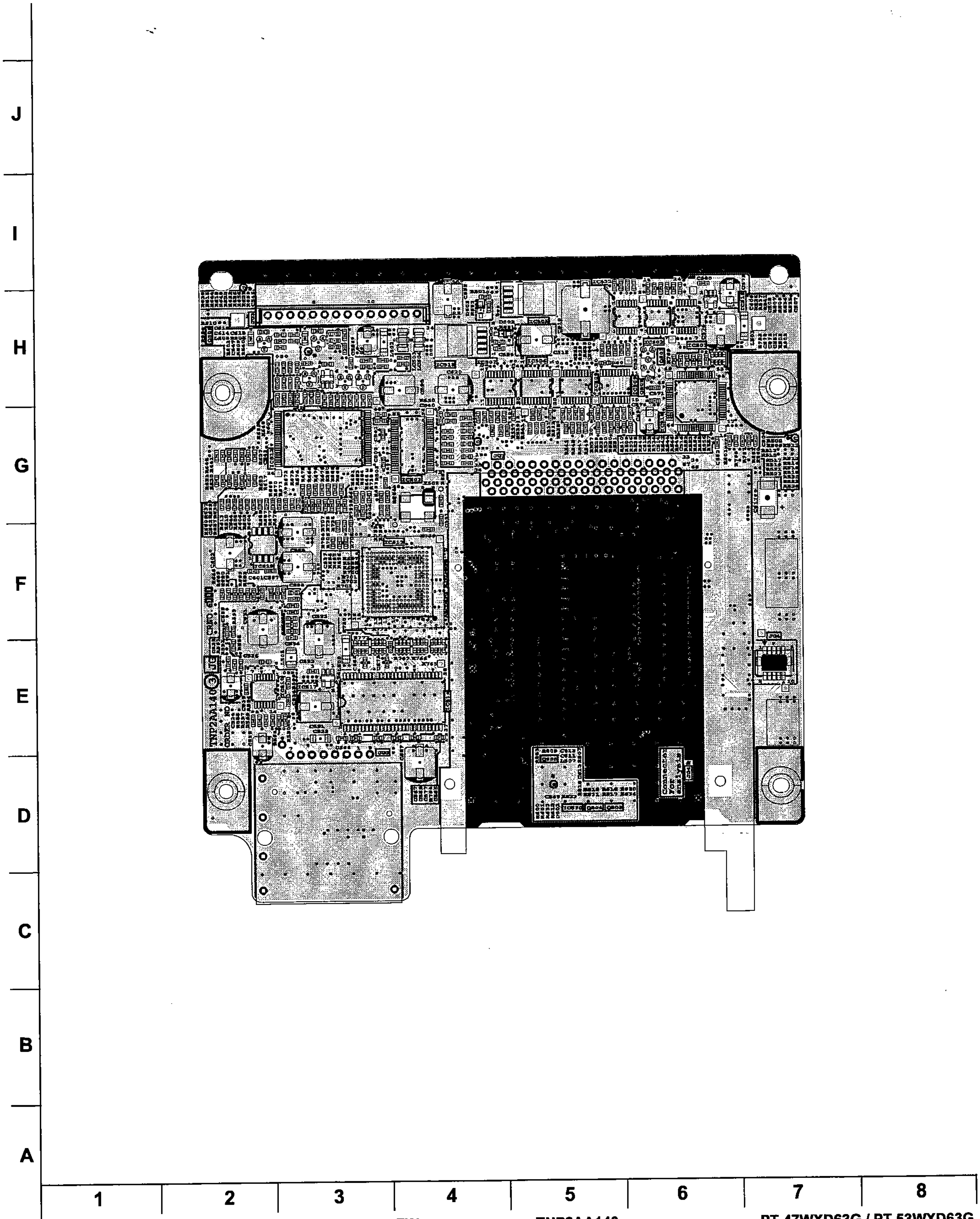
PT-47WXD63G / PT-53WXD63G

20.14. JG-Board Printed Circuit (bottom view)


J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
SEE REVERSE FOR ORDER NO.
TNP2AA140 ③ JG
CRNO.6

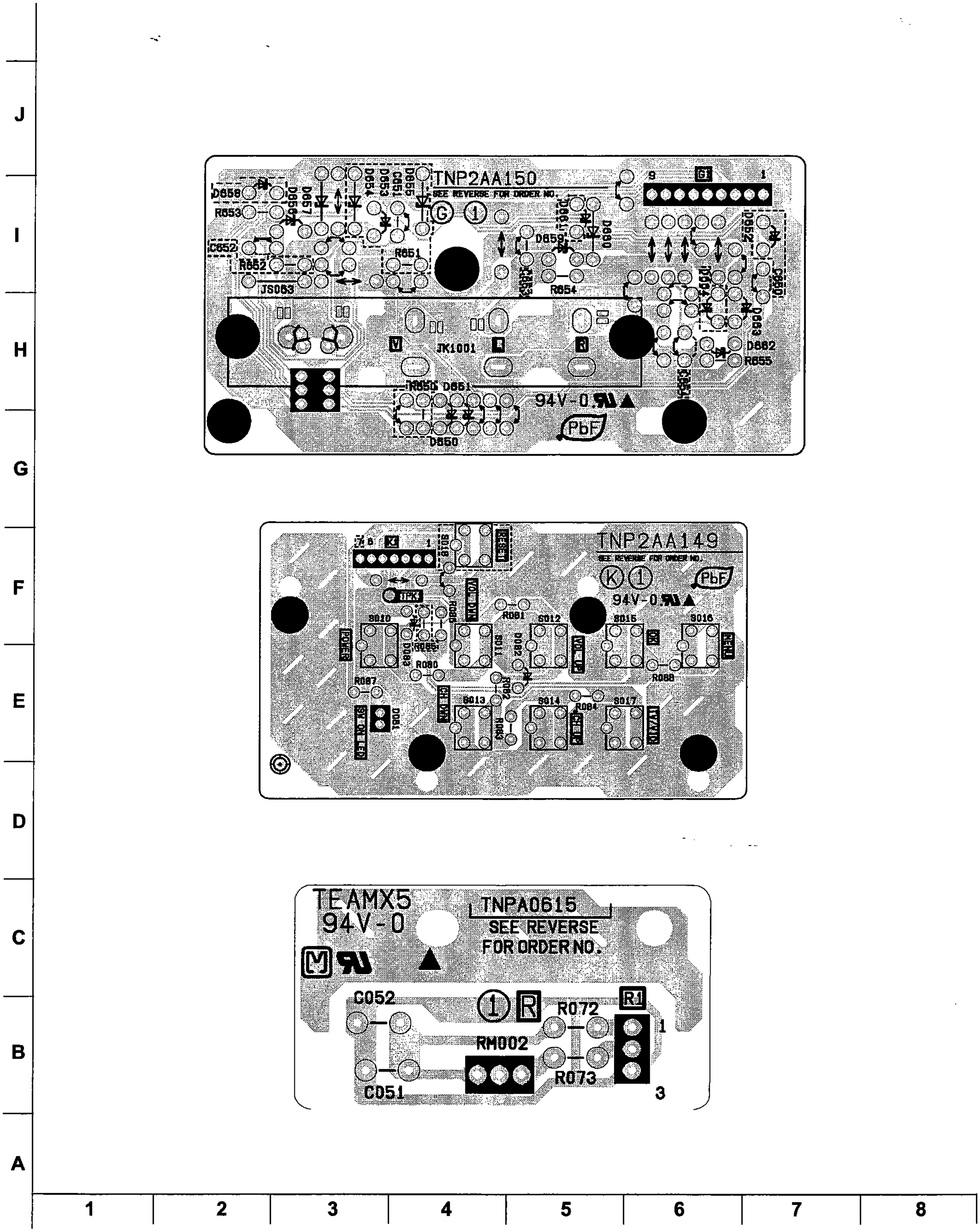
JG-PCB BOTTOM VIEW TNP2AA140 PT-47WXD63G / PT-53WXD63G

20.15. JG-Board Printed Circuit (top view)


J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
TNP2AA140
JG

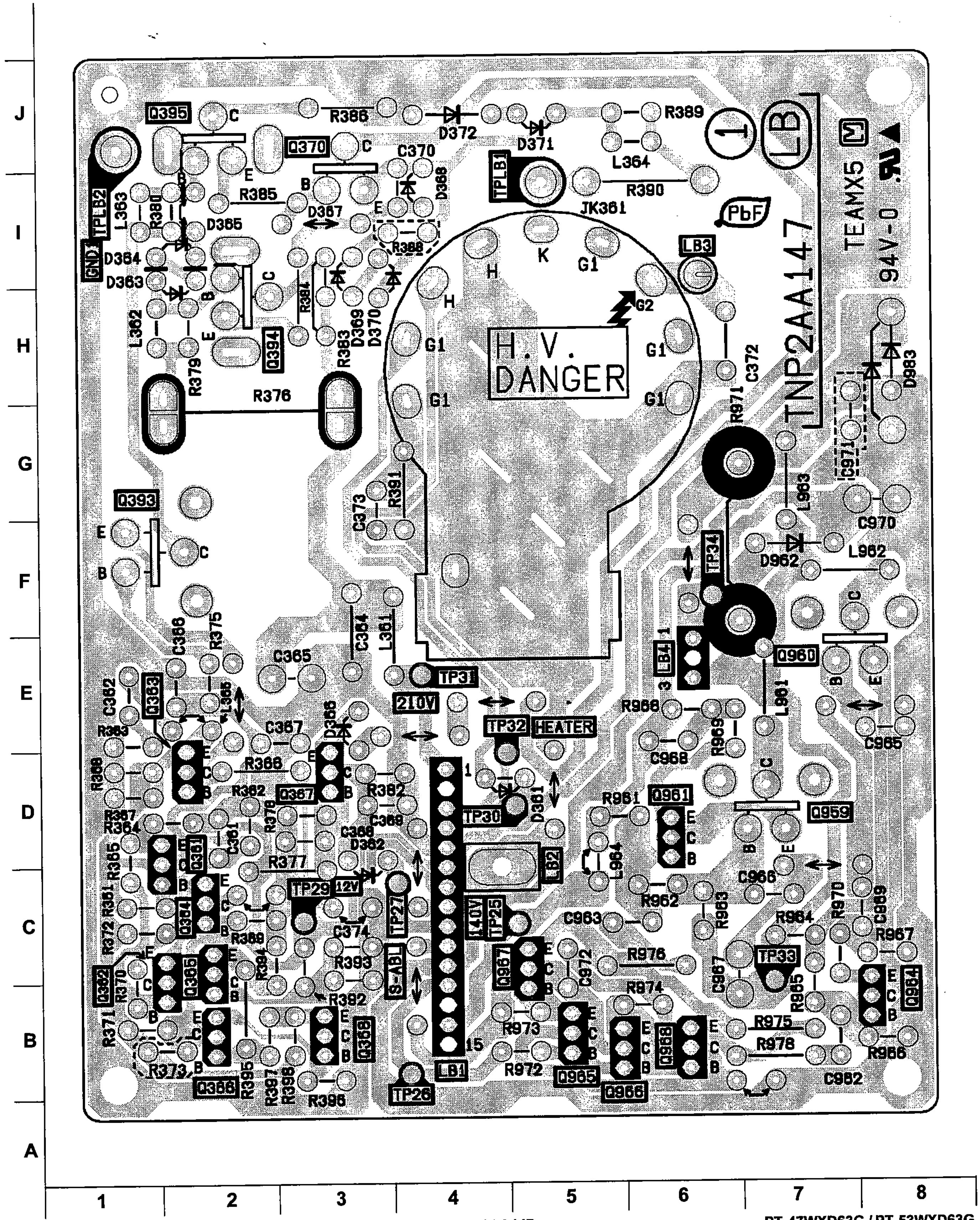
JG-PCB TOP VIEW TNP2AA140 PT-47WXD63G / PT-53WXD63G

20.16. K, G & R Printed Circuit Boards



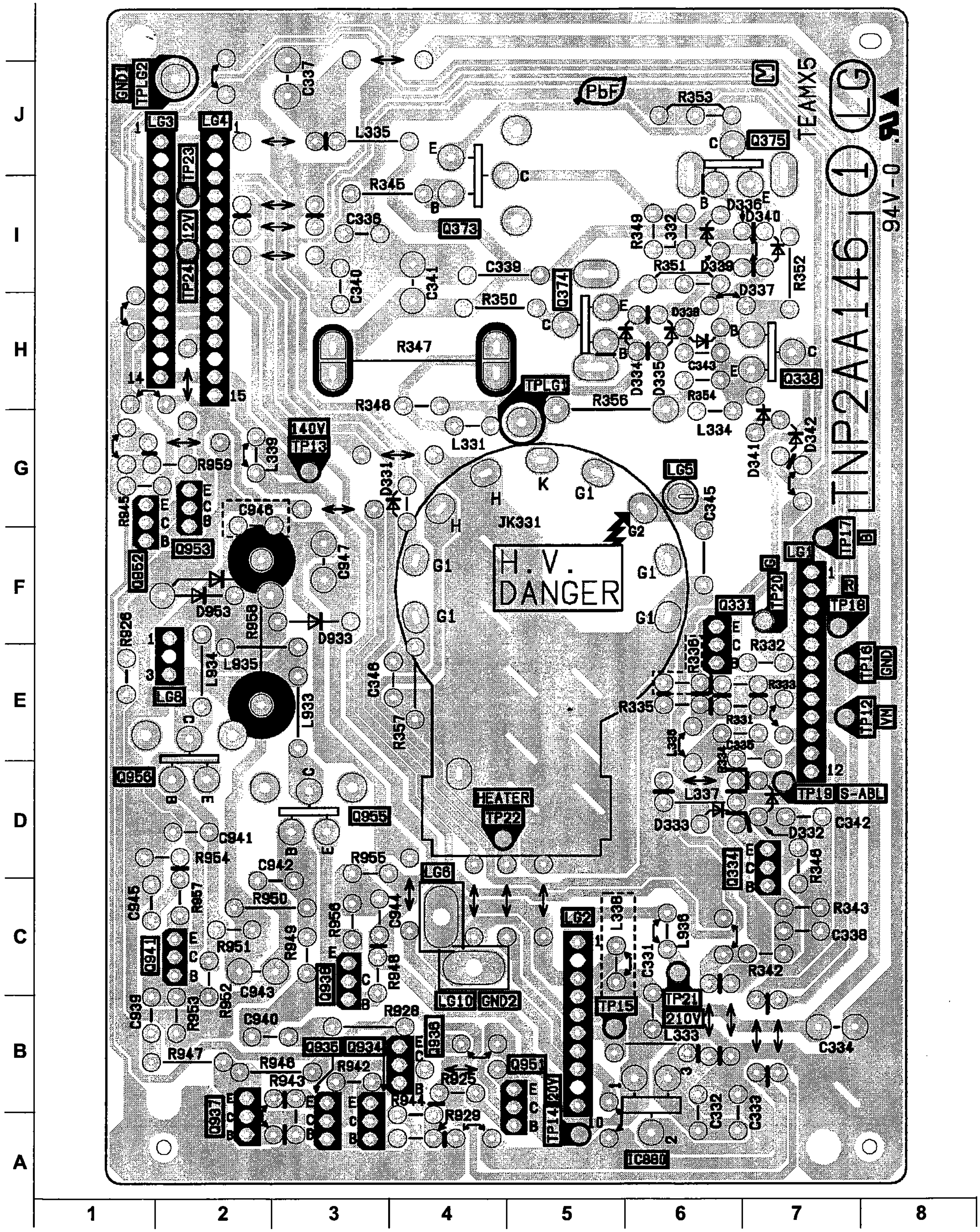
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
TNP2AA150
SEE REVERSE FOR ORDER NO.
G 1
9
G1
1
D658
R653
C652
R652
JS063
D657
D656
D654
D653
C651
D655
R651
D661
D659
C653
R654
D660
D652
C650
D664
D663
D662
R655
C654
JK1001
V
L
R
R650
D651
D650
94V-0
PbF
TNP2AA149
SEE REVERSE FOR ORDER NO.
K 1
94V-0
PbF
8
K1
1
S018
TPK
S010
S011
S012
S015
S016
S013
S014
S017
R080
R081
R082
R083
R084
R085
R086
R087
R088
D081
D082
D083
POWER
VOL DOWN
VOL UP
CH DOWN
CH UP
INPUT
OK
MENU
ST ON LED
TEAMX5
94V-0
TNPA0615
SEE REVERSE FOR ORDER NO.
M
C052
C051
1 R
R1
R072
R073
RM002
1
3

20.17. LB-Board Printed Circuit


J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
Q395
Q370
C370
R386
D372
D371
R389
L364
R390
JK361
TPLB1
TPLB2
GND
L363
R380
D365
D364
D363
R385
D367
D368
R388
L362
R379
Q394
R384
R383
D369
D370
R376
H
K
G1
G2
H.V.
DANGER
LB3
PbF
LB
TNP2AA147
TEAMX5
94V-0
C372
R971
D983
C971
L963
C970
D962
L962
Q393
E
B
C
C386
R375
C365
C364
L361
C373
R391
TP31
210V
TP32
HEATER
LB4
Q960
L961
R968
R969
C968
C965
Q363
C382
R363
L365
C367
D366
R366
R368
R362
Q367
R382
R367
R364
Q361
C361
R378
C368
C369
D362
R377
R365
R361
Q364
TP29
12V
TP27
LB2
L964
TP30
D361
R961
Q961
Q959
C966
R962
R963
R970
C969
R964
R967
R372
Q362
R370
Q365
R369
R394
C374
R393
R392
S-ABL
140V
TP25
Q967
C963
C972
R976
R974
C967
TP33
R965
Q964
R371
R373
Q366
R395
R397
R398
R396
Q368
TP26
LB1
15
R973
R972
Q965
Q966
Q968
R975
R978
R966
C982

LB-BOARD TNP2AA147 PT-47WXD63G / PT-53WXD63G

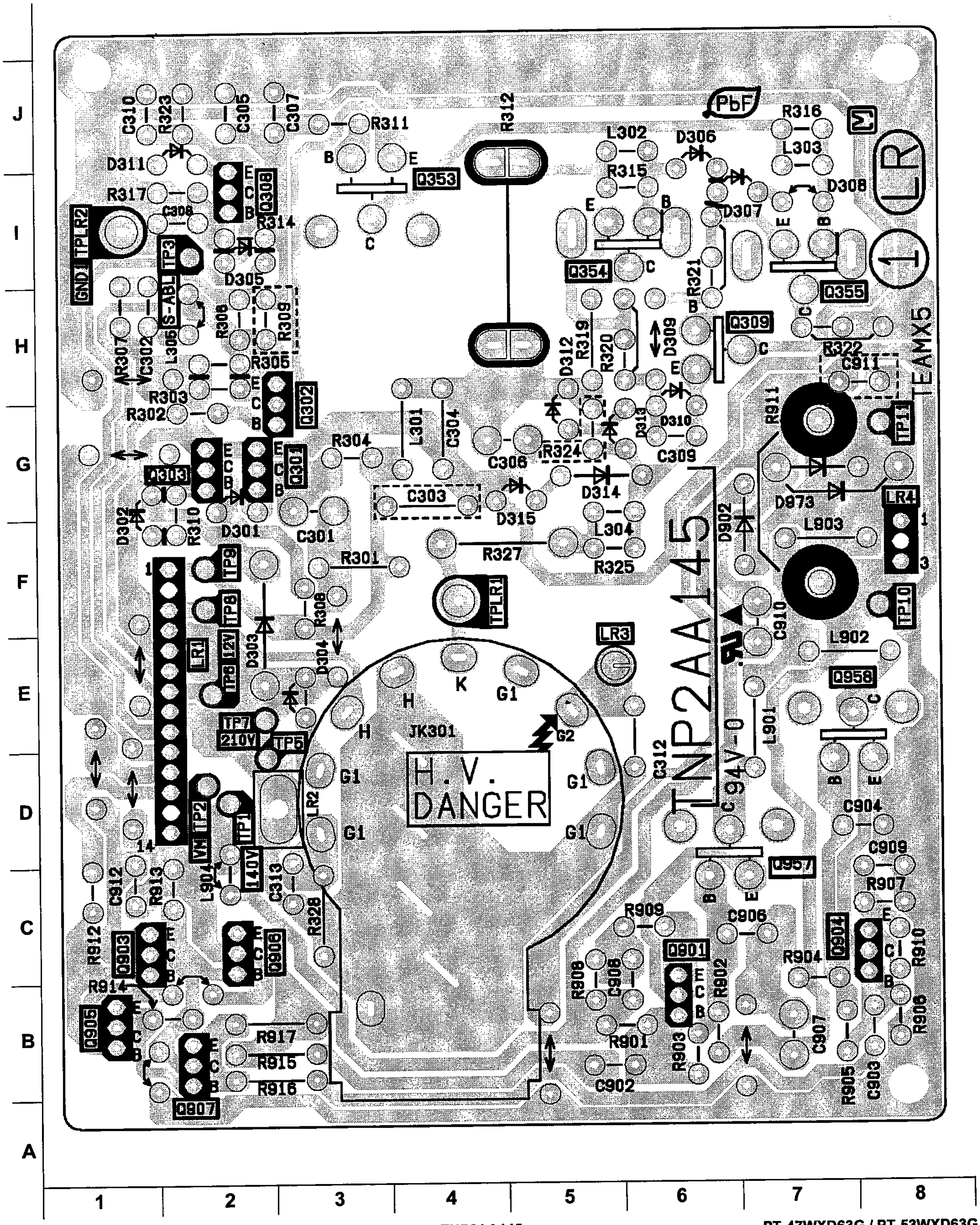
20.18. LG-Board Printed Circuit


J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
GND1
TPLG2
C337
PbF
R353
TEAMX5
LG
Q375
94V-0
TNP2AA146
LG3
LG4
TP23
12V
TP24
L335
R345
Q373
C336
C340
C341
C339
R350
Q374
R349
L332
D336
D340
R351
D339
D337
R352
D338
R347
TPLG1
R348
R356
D334
D335
C343
R354
Q338
L334
D341
D342
140V
TP13
L339
R959
L331
D331
K
G1
LG5
C345
R945
Q953
C946
H
JK331
G2
Q952
C947
H.V.
DANGER
LG1
TP17
TP20
Q331
TP18
D953
R958
D933
R926
L934
L935
C346
R336
R332
TP16
GND
LG8
L933
R357
R335
R333
R331
TP12
VM
L336
C335
R334
Q956
L337
TP19
S-ABL
Q955
HEATER
TP22
D333
D332
C342
C941
R954
C942
R955
LG6
Q334
R346
C945
R957
R950
C944
L338
L936
R343
C338
Q941
R951
R949
R956
R948
Q938
C331
R342
C939
R953
R952
C943
C940
R928
LG10
GND2
TP15
TP21
210V
L333
C334
R947
Q935
Q934
Q936
R946
R942
R943
R925
Q951
R944
R929
20V
TP14
C332
C333
Q937
IC880
E
C
B

LG-BOARD

TNP2AA146

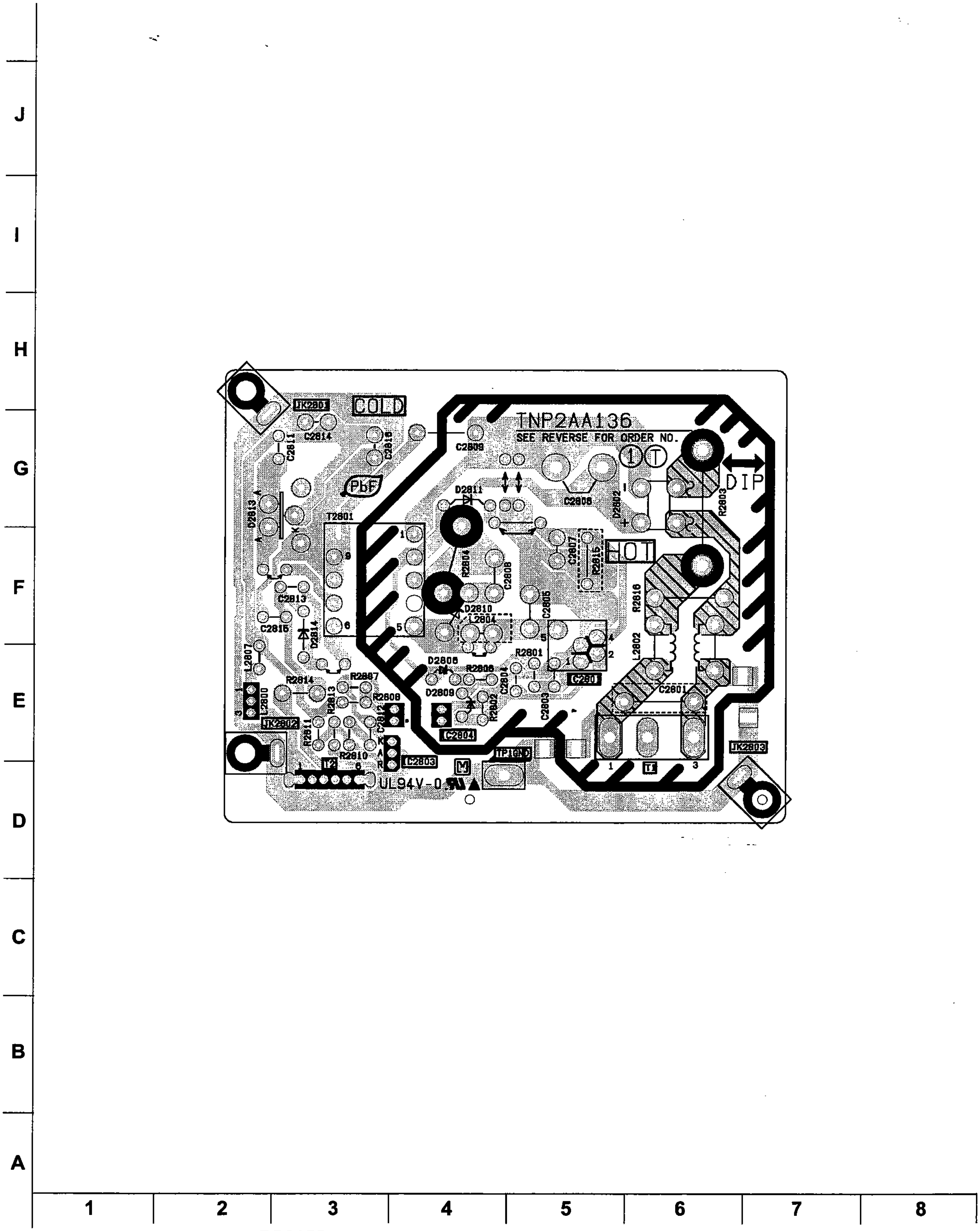
20.19. LR-Board Printed Circuit



J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
C310
R323
C305
C307
R311
R312
PbF
R316
L302
D306
L303
R315
D308
D307
D311
R317
C308
Q308
R314
Q353
Q354
Q355
Q309
TPLR2
GND1
TP3
S-ABL
D305
R306
R309
L305
R307
C302
R305
R303
R302
Q302
R321
R319
R320
D312
D309
D313
D310
R322
C911
R911
TP11
TEAMX5
LR
L301
C304
R304
C306
R324
C309
D314
Q303
Q301
D302
R310
D301
C301
C303
D315
L304
R327
R325
D973
L903
D902
LR4
R301
TP9
TP6
TP8
12V
LR1
TPLR1
R308
D303
D304
LR3
TNP2AA145
C910
L902
TP10
Q958
K
G1
H
JK301
G2
H.V.
DANGER
TP7
210V
TP5
C312
94V-0
L901
TP2
VM
TP1
140V
LR2
L904
C313
C904
C909
R907
Q957
C912
R913
R912
Q903
Q906
R328
R909
C906
R908
C908
Q901
R902
Q904
R904
R910
R914
Q905
R917
R915
R916
Q907
R901
R903
C902
C907
R906
R905
C903
14

LR-BOARD TNP2AA145 PT-47WXD63G / PT-53WXD63G

20.20. T-Board Printed Circuit

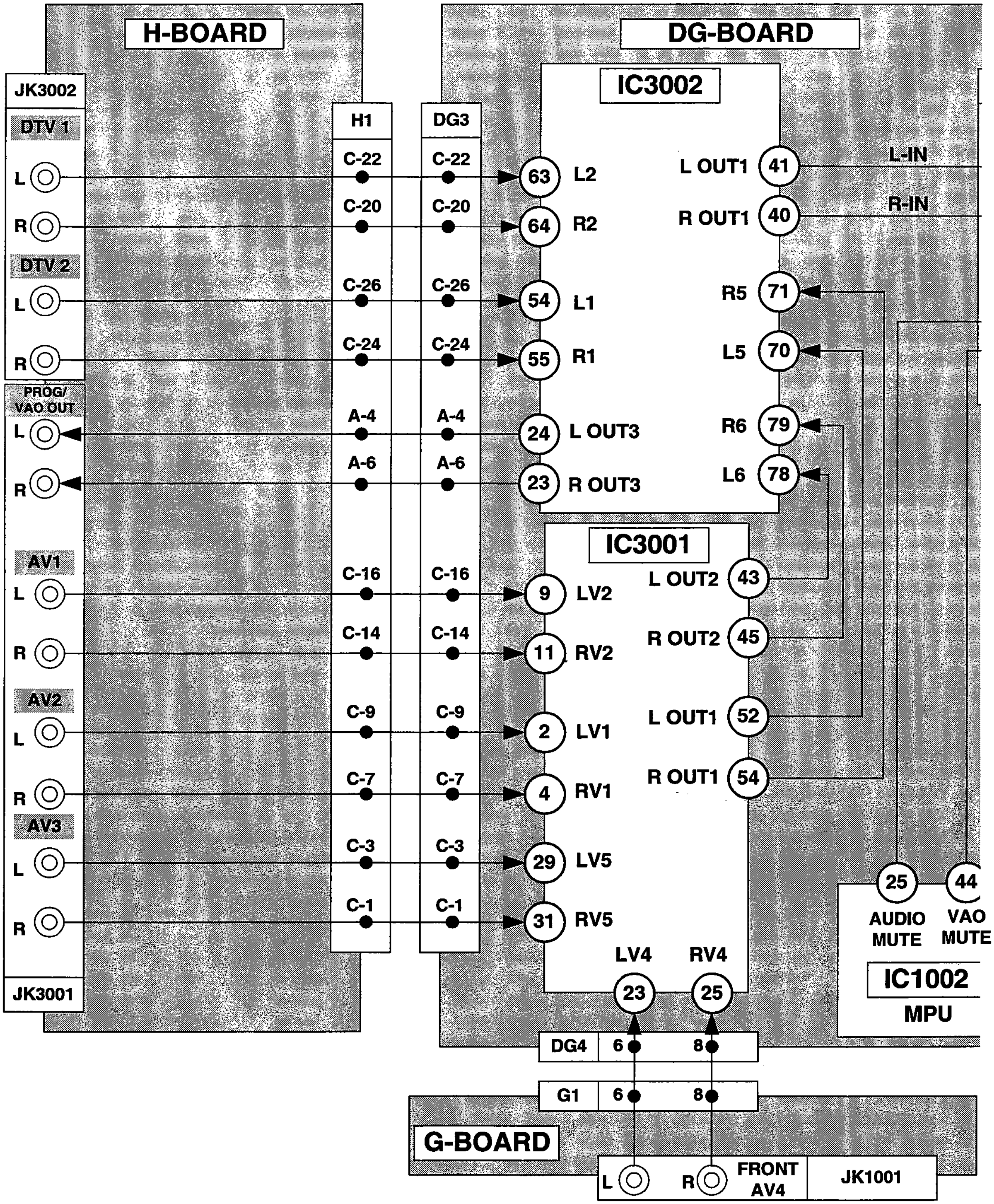

J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
JK2801
COLD
TNP2AA136
SEE REVERSE FOR ORDER NO.
①Ⓣ
DIP
C2814
C2811
C2816
C2809
PbF
D2811
C2806
D2802
R2803
C2813
T2801
HOT
C2807
R2815
R2804
C2808
C2805
R2816
C2813
D2810
L2804
C2815
D2814
L2802
L2807
D2805
R2806
R2801
C2801
R2814
R2807
R2813
R2808
D2809
C2804
R2802
C2803
L2800
JK2802
R2811
R2810
C2812
K
A
R
IC2804
IC2803
IC2802
TPIGND
JK2803
T2
T1
UL94V-0

T-BOARD **TNP2AA136** **PT-47WXD63G / PT-53WXD63G**

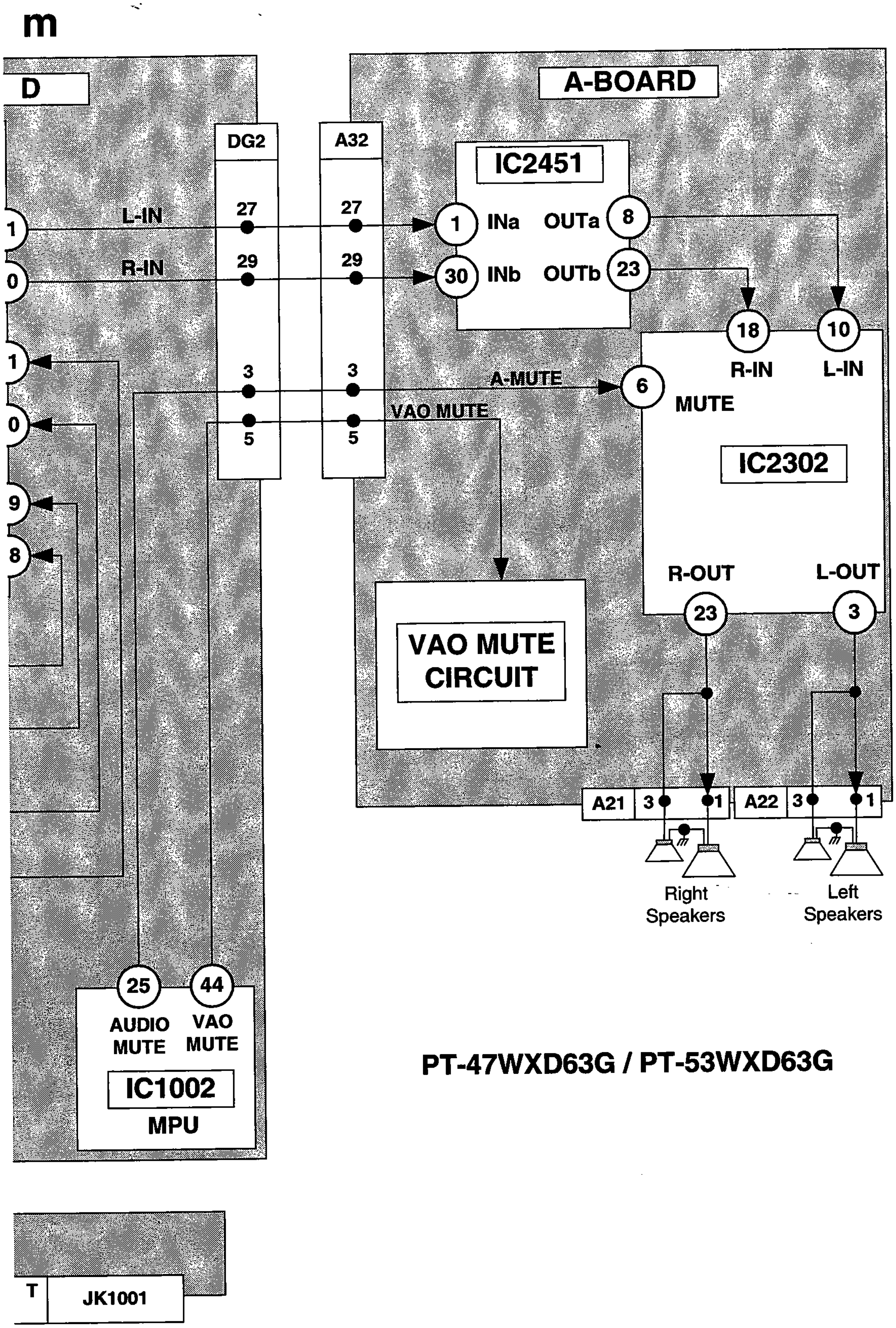
21 Block diagrams

21.1. Audio block diagram page (1 of 2)

Audio signal path block diagram

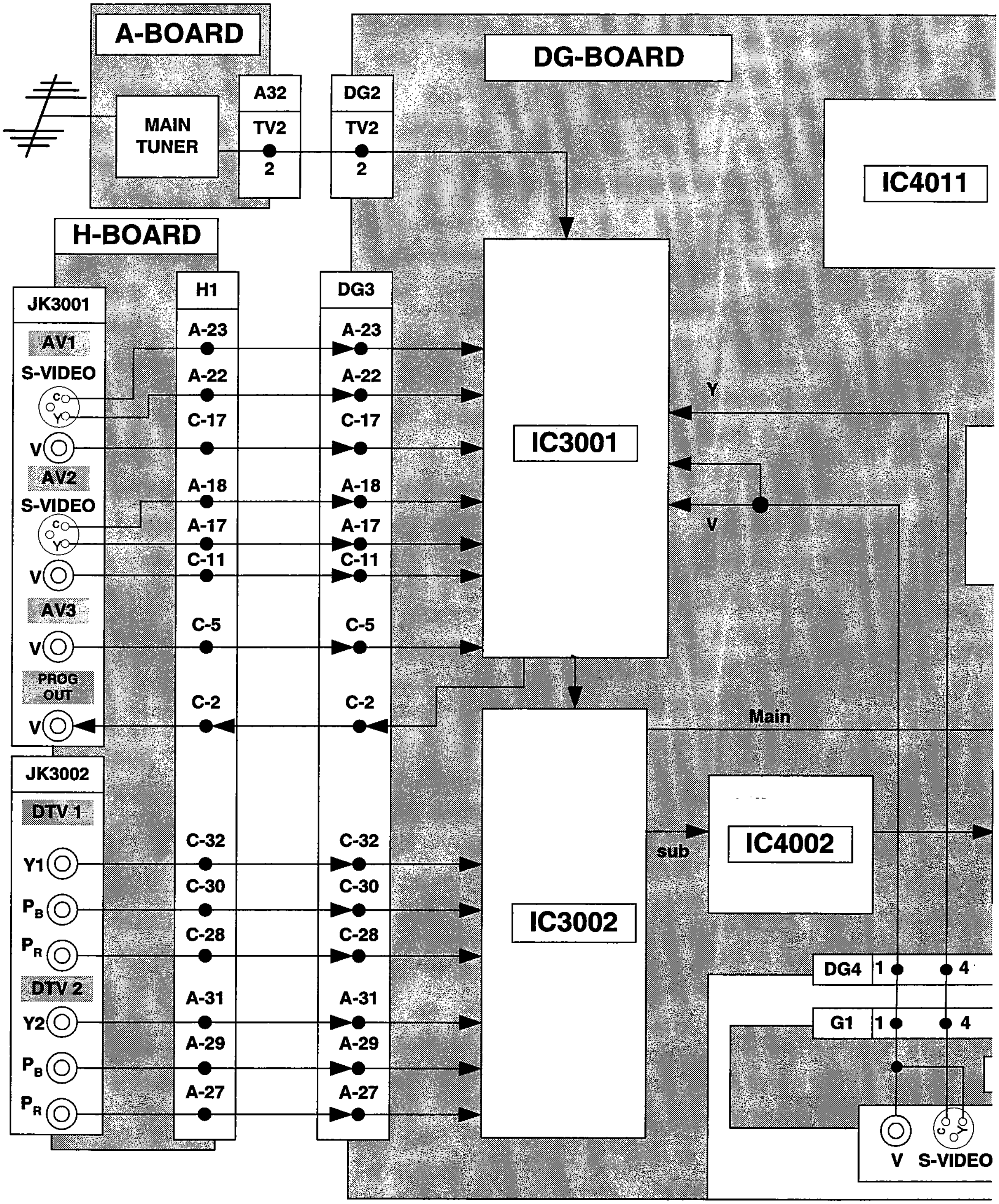

H-BOARD
DG-BOARD
JK3002
DTV 1
L
R
DTV 2
L
R
PROG/
VAO OUT
L
R
AV1
L
R
AV2
L
R
AV3
L
R
JK3001
H1
DG3
C-22
C-20
C-26
C-24
A-4
A-6
C-16
C-14
C-9
C-7
C-3
C-1
IC3002
63 L2
64 R2
54 L1
55 R1
24 L OUT3
23 R OUT3
L OUT1 41
R OUT1 40
R5 71
L5 70
R6 79
L6 78
L-IN
R-IN
IC3001
9 LV2
11 RV2
2 LV1
4 RV1
29 LV5
31 RV5
L OUT2 43
R OUT2 45
L OUT1 52
R OUT1 54
LV4
RV4
23
25
25
AUDIO
MUTE
44
VAO
MUTE
IC1002
MPU
DG4
6
8
G1
6
8
G-BOARD
L
R
FRONT
AV4
JK1001

21.2. Audio block diagram (page 2 of 2)


m
D
DG2
A32
A-BOARD
IC2451
1
L-IN
27
27
1
INa
OUTa
8
0
R-IN
29
29
30
INb
OUTb
23
18
10
R-IN
L-IN
1
3
3
A-MUTE
6
MUTE
0
VAO MUTE
5
5
IC2302
9
8
R-OUT
L-OUT
23
3
VAO MUTE CIRCUIT
A21
3
1
A22
3
1
Right Speakers
Left Speakers
25
44
AUDIO MUTE
VAO MUTE
IC1002
MPU
T
JK1001

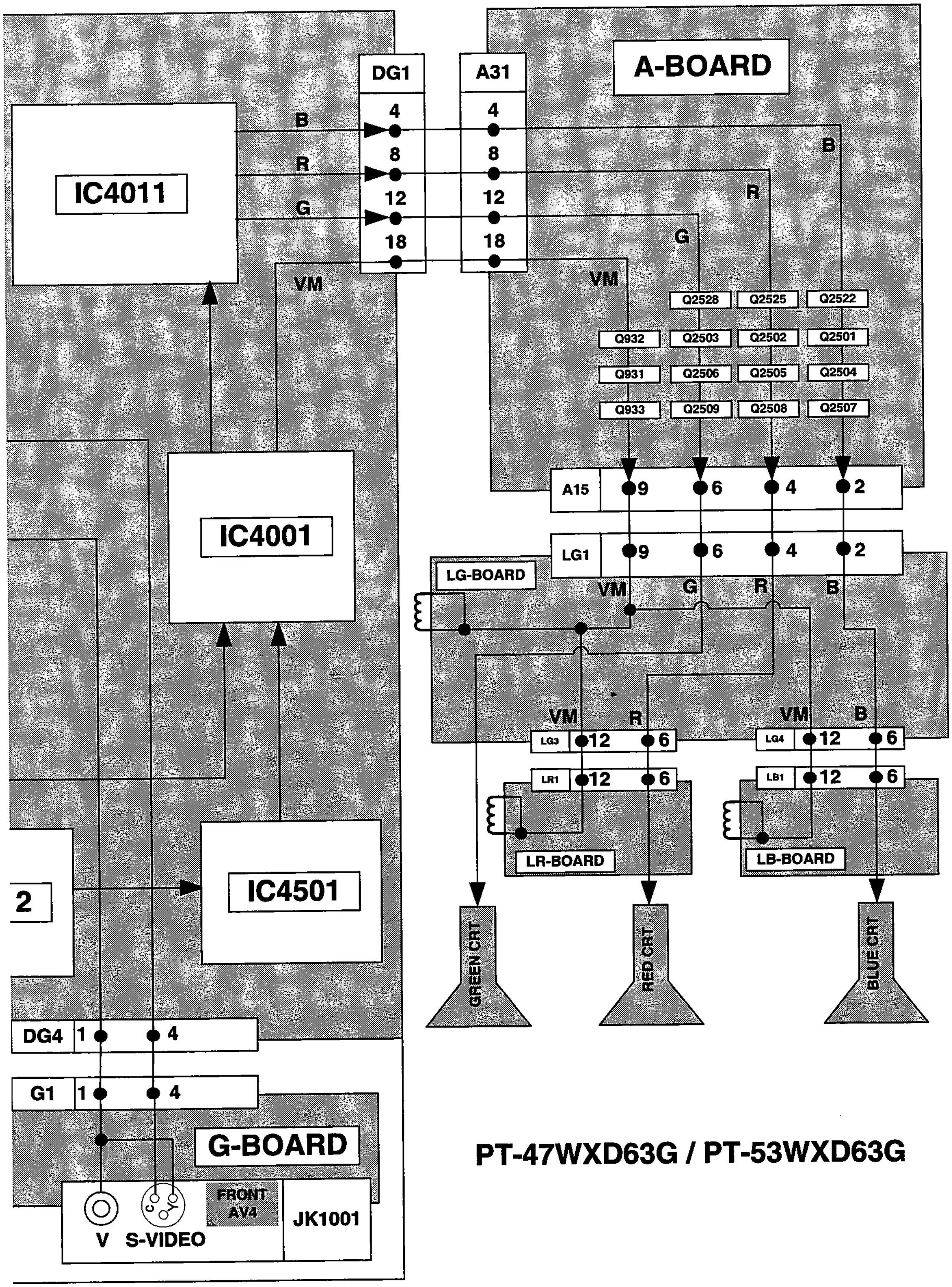
PT-47WXD63G / PT-53WXD63G

Video signal path block diagram


A-BOARD
MAIN TUNER
A32
TV2
2
DG2
TV2
2
DG-BOARD
IC4011
H-BOARD
JK3001
AV1
S-VIDEO
V
AV2
S-VIDEO
V
AV3
V
PROG OUT
V
H1
A-23
A-22
C-17
A-18
A-17
C-11
C-5
C-2
DG3
A-23
A-22
C-17
A-18
A-17
C-11
C-5
C-2
IC3001
Y
V
Main
JK3002
DTV 1
Y1
PB
PR
DTV 2
Y2
PB
PR
C-32
C-30
C-28
A-31
A-29
A-27
IC3002
sub
IC4002
DG4
1
4
G1
1
4
V
S-VIDEO

]

21.4. Video block diagram (page 2 of 2)


DG1
A31
A-BOARD
IC4011
B
R
G
VM
4
8
12
18
Q2528
Q2525
Q2522
Q932
Q2503
Q2502
Q2501
Q931
Q2506
Q2505
Q2504
Q933
Q2509
Q2508
Q2507
A15
9
6
4
2
LG1
LG-BOARD
IC4001
LG3
LR1
LG4
LB1
12
6
LR-BOARD
LB-BOARD
GREEN CRT
RED CRT
BLUE CRT
2
IC4501
DG4
1
4
G1
G-BOARD
FRONT AV4
JK1001
V
S-VIDEO
C
Y

PT-47WXD63G / PT-53WXD63G

22 Schematic diagrams

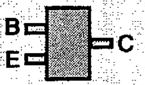
22.1. Schematic diagrams notes

Notes:

IMPORTANT SAFETY NOTICE

THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES THAT ARE IMPORTANT FOR PROTECTION FROM X-RADIATION, FIRE AND ELECTRICAL SHOCK HAZARDS. WHEN SERVICING IT IS ESSENTIAL THAT ONLY MANUFACTURERS SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS DESIGNATED WITH A ⚠ IN THE SCHEMATIC.

CHIP TRANSISTOR LEAD DESIGNATION



SCHEMATIC NOTES

1. Resistors are carbon 1/4W unless noted otherwise.
2. Capacitors are ceramic 50V unless noted otherwise.
3. Coil value notes is inductance in µH.
4. Test point indicated by ⫯ ; Test point but no pin ⫯.
5. Components indicated with ⚠ are critical parts and replacement should be made with manufacture specified replacement parts only.
6. ▬ (**BOLD LINE**) indicates the route of B+ supply.
7. The schematic diagrams are current at the time of printing and are subject to change without notice.
8. Ground symbol ⏚ indicates **HOT GROUND CONNECTION**; ⏛ indicates COLD GROUND.

NOTE: All other component symbols are used for engineering design purposes.

VOLTAGE MEASUREMENTS

1. Voltage measurement:
   - AC input to the Receiver is 120V. NTSC (HD, 1125I & 525P when applicable) signal generator is connected to the antenna of the Receiver. (Color bar pattern of 100 IRE white and 7.5 IRE black.)
   - All Picture and Audio adjustments are set to Normalize.
     TV ANT/CABLE - (Set-Up Menu) in TV/ANT Mode
     Volume - Min.
     TV/Video SW - TV position
     Audio Mode - Stereo
   - Voltage readings are nominal and may vary ±10% on active devices.
   - Some voltage reading will vary with signal strength and picture content.
   - Supply voltages are nominal.
2. Ground symbol ⏚ indicates ground lead connection of meter.
   Incorrect ground connection will result in erroneous readings.

*CAUTION: **Incorrect ground connection of the test equipment will result in erroneous readings.***

WAVEFORM MEASUREMENTS

1. ③ indicates waveform measurement. (Measurement can be taken at the best accessible location in common to the indicated point.)
2. Taken with an NTSC signal generator connected to the antenna terminal. (NTSC color bar pattern of 8 bars of EIA colors, 100 IRE white and 7.5 IRE black.)
3. Customer Controls (Picture/Audio Menu) are set to Normalize. Volume is set to "MIN".
4. All video and color waveforms are taken with a wideband scope and a probe with low capacitance (10 to 1). Shape and peak altitudes may vary depending on the type of Oscilloscope used and its settings.
5. Ground symbol ⏚ shown on waveform number indicates (Hot) ground lead connection of the Oscilloscope.

CAUTION: Incorrect ground connection of the test equipment will result in erroneous readings.

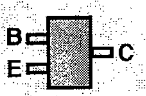
22.2. Notas de los diagramas esquemáticos

Notas

NOTA DE SEGURIDAD

LOS DIAGRAMAS ELÉCTRICOS INCLUYEN CARACTERÍSTICAS ESPECIALES MUY IMPORTANTES PARA LA PROTECCIÓN CONTRA RAYOS-X, QUEMADURAS Y DESCARGAS ELÉCTRICAS. CUANDO SE DE SERVICIO ES IMPORTANTE USAR PARA REEMPLAZO DE COMPONENTES CRITICOS, SOLO PARTES ESPECIFICADAS POR EL FABRICANTE. LOS COMPONENTES CRITICOS ESTAN SEÑALADOS EN LOS DIAGRAMAS POR EL SIMBOLO ⚠.

IDENTIFICACIÓN DE TERMINALES PARA TRANSISTORES EN *CHIP*



NOTAS DE LOS DIAGRAMAS

1. Las Resistencias son de Carbón de 1/4W, a menos que se indique otra característica.
2. Los Capacitores son de Cerámica para 50V, a menos que se indique otra característica.
3. El valor indicado de las Bobinas es la inductancia expresada en µH.
4. Los puntos de prueba en la terminal de algún componente son indicados por ⫯ Los puntos de prueba fuera de los componentes se indican con ⫯.
5. Los componentes señalados con el símbolo ⚠ son considerados componentes críticos y deben ser reemplazados sólo con las partes especificadas por el fabricante.
6. ▬ (**LINEA GRUESA**) indica las líneas de alimentación de los Voltajes B+.
7. Los diagramas eléctricos están sujetos a cambio sin previo aviso.
8. El símbolo ⏚ indica que es una conexión a **Tierra Caliente** y el símbolo ⏊ indica conexión a **Tierra Fría**.

NOTA: Los demas símbolos de componentes incluidos son usados con fines de diseño.

MEDICIÓN DE VOLTAJES

1. Medición de voltaje:
   - El voltaje de entrada al Receptor es de 120V de Corriente Alterna. Un generador de patrones con formato NTSC se conecta a la entrada de la antena. (Patrón de Barras de Colores con 100 IREs para el Blanco y 7.5 IREs para el Negro.)
   - Los ajustes de los Menus Picture y Audio se normalizan.
   En el Menú Set-Up, en la opción ANTENA, se selecciona el modo de CABLE.
   El nivel de Volumen se minimiza.
   De los modos TV y Video, seleccionar el modo TV.
   Seleccionar modo Estereo del Audio.
   - Las mediciones de los voltajes son nominales y pueden variar hasta 10% en componentes en funcionamiento. Las lecturas de los voltajes pueden variar por la potencia de la señal y el contenido de la imagen.
   - Las fuentes de voltajes son nominales.
2. El símbolo ⏚ indica el tipo de tierra que se utiliza en la conexión del medidor.

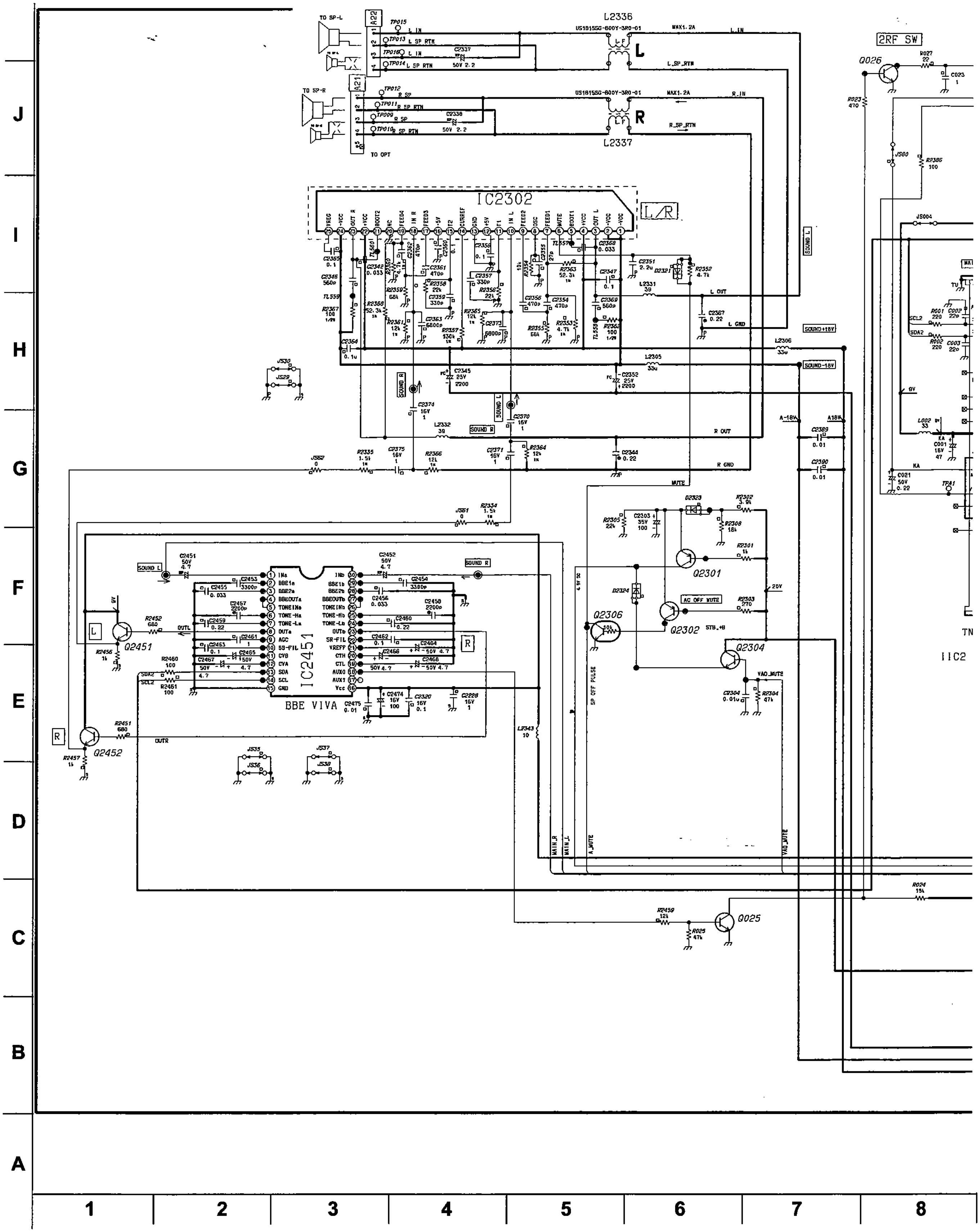
PRECAUCION: SI no se utiliza la conexión a la tierra adecuada, se obtendrán mediciones equivocadas y podría dañar el equipo de medición.

MEDICIÓN DE FORMAS DE ONDA

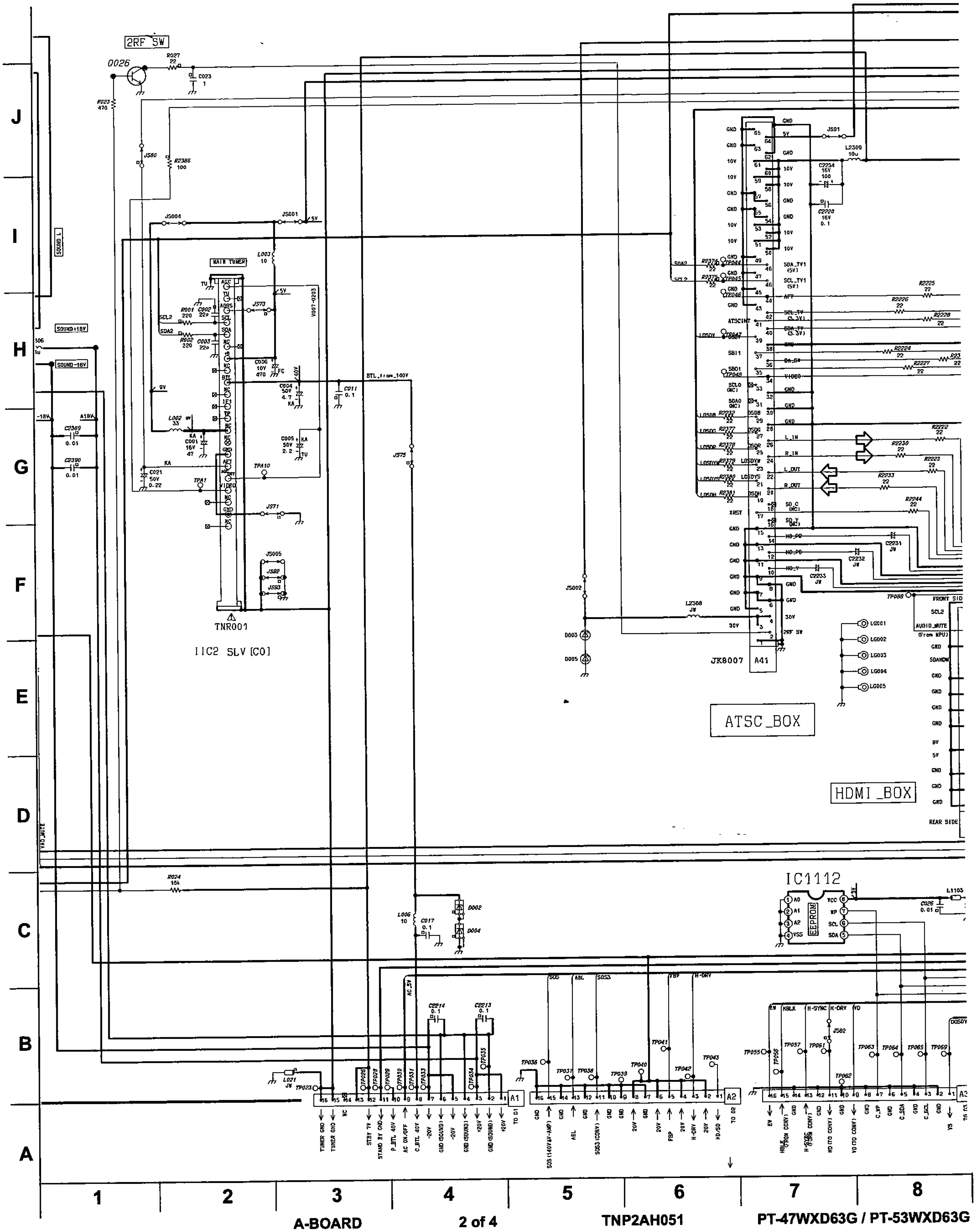
1. Un símbolo como ③ indica el punto para medir una señal. (La medición puede hacerse en el punto con mayor accesibilidad, siempre que sea común al indicado.)
2. Se midieron utilizando un generador con formato NTSC conectado a la terminal de la antena. (Patrón de 8 Barras de Colores EAI, formato NTSC de 100 IREs para el Blanco y 7.5 IREs para el Negro.)
3. Los ajustes de usuario de los Menus PICTURE y AUDIO se normalizaron. Posteriormente el nivel de volumen se ajusta al mínimo.
4. Las formas de onda de Video y Color fueron tomadas con un osciloscopio de banda alta y con un punta de prueba de baja capacitancia (10 a 1). La forma y amplitud de las ondas puede variar según el tipo de osciloscopio que se utilice y sus características.
5. El símbolo de tierra ⏚ que aparece junto al número de la forma de onda, indica que se utiliza conexión a **Tierra Caliente** en el extremo negativo de la punta de prueba.

PRECAUCION: Si no se utiliza la conexión a la tierra adecuada, se obtendrán mediciones equivocadas y podría dañar el equipo de medición.

22.3. A-Board schematic 1 of 4

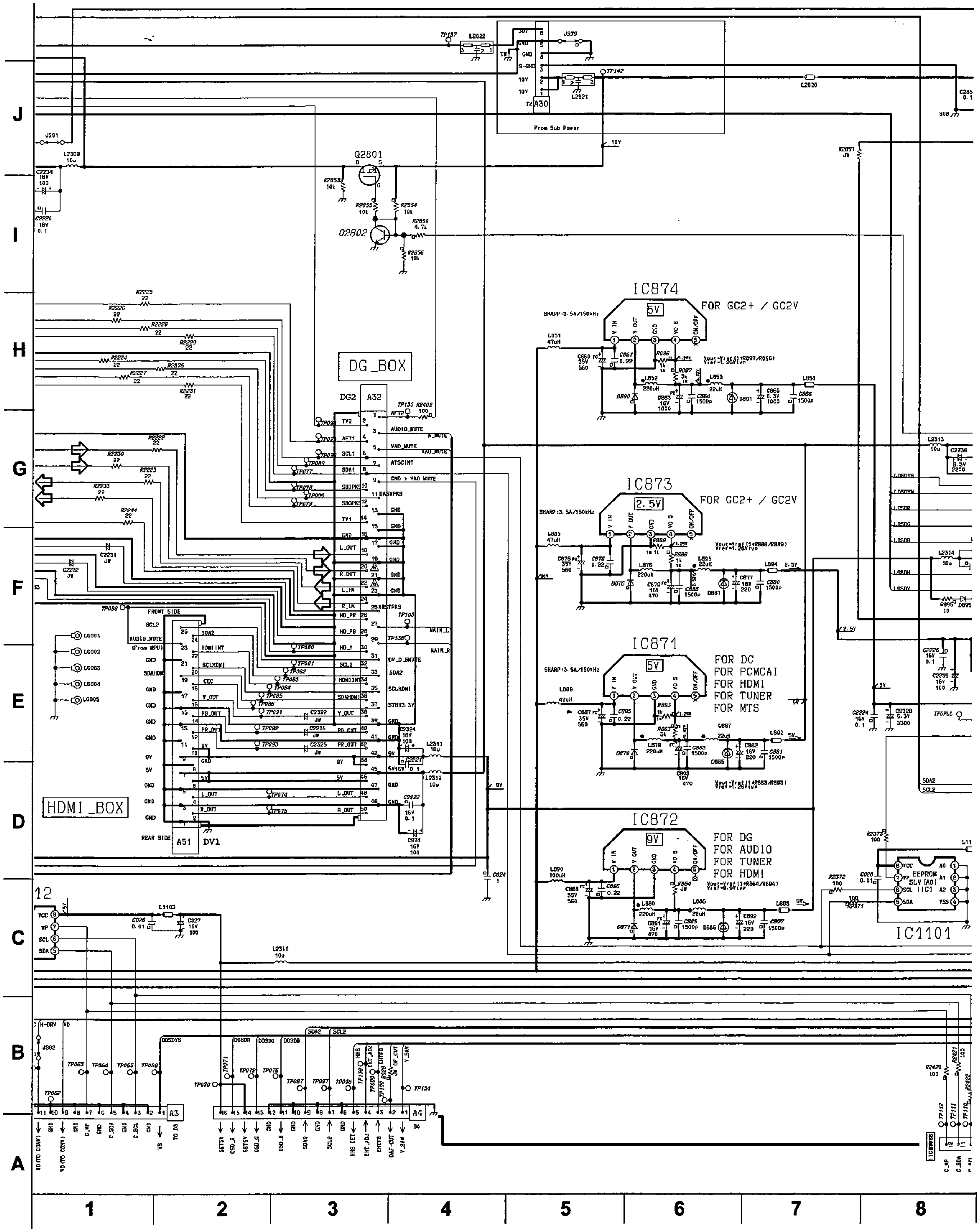

J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
TO SP-L
TO SP-R
TO OPT
A22
A21
TP015
TP013
TP016
TP014
TP012
TP011
TP009
TP010
L IN
L SP RTN
R SP
R SP RTN
C2337
C2338
50V 2.2
L2336
L2337
L
R
L IN
L SP RTN
R IN
R SP RTN
MAX1.2A
IC2302
L/R
SOUND L
SOUND R
SOUND+18V
SOUND-18V
L OUT
L GND
R OUT
R GND
L2305
L2306
L2331
L2332
MUTE
A-18V
A18V
C2389
C2390
0.01
2RF SW
Q026
R027
C023
R023
470
J580
R2386
100
J5004
Q2301
Q2302
Q2304
Q2306
D2323
D2324
AC OFF MUTE
STB+8
20V
VAO_MUTE
SP OFF PULSE
4.9V DC
R2302
R2303
R2304
R2305
R2301
R2308
C2303
C2304
IC2451
BBE VIVA
SOUND L
SOUND R
Q2451
Q2452
L
R
R2452
680
R2451
680
R2456
R2457
1k
R2460
100
R2461
100
SDA2
SCL2
OUTL
OUTR
C2451
C2452
C2453
C2454
C2455
C2456
C2457
C2458
C2459
C2460
C2461
C2462
C2463
C2464
C2465
C2466
C2467
C2468
C2474
C2475
C2320
C2228
INa
BBE1a
BBE2a
BBEOUTa
TONEINa
TONE-Ha
TONE-La
OUTa
AGC
SS-FIL
CVB
CVA
SDA
SCL
GND
INb
BBE1b
BBE2b
BBEOUTb
TONEINb
TONE-Hb
TONE-Lb
OUTb
SR-FIL
VREFF
CTH
CTL
AUXO
AUXI
Vcc
J535
J536
J537
J538
J529
J530
J561
J562
R2334
R2335
R2366
R2364
C2371
C2375
C2374
C2370
C2344
C2345
C2352
L2343
10
MAIN_R
MAIN_L
A_MUTE
VAO_MUTE
R024
15k
R2459
12k
R025
47k
Q025
TN
IIC2
SCL2
SDA2
R001
R002
C002
C003
L002
C001
C021
TPA1
TU
KA
9V

22.4. A-Board schematic 2 of 4



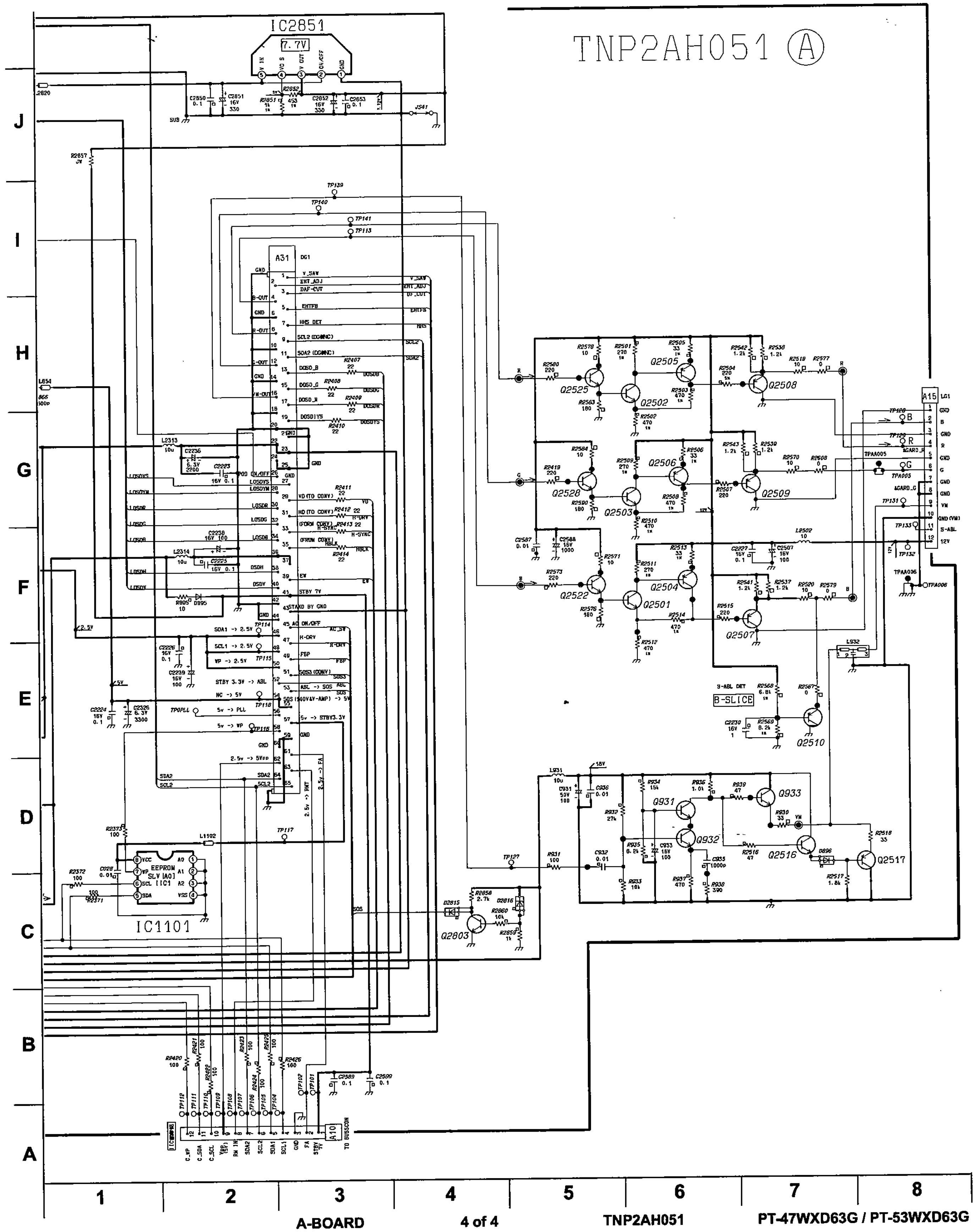
2RF SW
Q026
R027 22
C023 1
R023 470
JS80
R2386 100
JS004
JS001
5V
SOUND L
L003 10
MAIN TUNER
TU
AGC
ADRS
SCL
SDA
NC
BTL
IF1
IF2
VIDEO
AFT
GND
SCL2
SDA2
R001 220
C002 22p
R002 220
C003 22p
JS73
C006 10V 470
C004 50V 4.7
KA
C011 0.1
BTL_from_140V
L002 33
C001 16V 47
C005 50V 2.2
C021 50V 0.22
TPA1
TPA10
JS71
JS005
JS92
JS93
JS75
TNR001
IIC2 SLV [C0]
SOUND+18V
SOUND-18V
-18V
A18V
C2389 0.01
C2390 0.01
JS002
D003
D005
L2308 JW
JK8007
A41
GND
5V
10V
SDA_TV1 (5V)
SCL_TV1 (5V)
AFT
SCL_TV (3.3V)
SDA_TV (3.3V)
ATSCINT
SB11
SB01
VIDEO
SCL0 (NC)
SDA0 (NC)
L_IN
R_IN
L_OUT
R_OUT
XRST
SD_C (NC)
SD_Y (NC)
HD_PR
HD_PB
HD_Y
30V
2RF SW
JS91
L2309 10u
C2234 16V 100
C2220 16V 0.1
R2225 22
R2226 22
R2228 22
R2224 22
R2227 22
R2222 22
R2230 22
R2223 22
R2233 22
R2244 22
C2231 JW
C2232 JW
C2233 JW
TP088
FRONT SIDE
SCL2
AUDIO_MUTE (From MPU)
SDANDW
REAR SIDE
LG001
LG002
LG003
LG004
LG005
ATSC_BOX
HDMI_BOX
VAC_DETE
R024 15k
IC1112
EEPROM
A0
A1
A2
VSS
VCC
WP
SCL
SDA
L1103
C026 0.01
L006 10
C017 0.1
D002
D004
AC_5V
C2214 0.1
C2213 0.1
L021 JW
TP023
TP026
TP028
TP029
TP030
TP031
TP033
TP034
TP035
TP036
TP037
TP038
TP039
TP040
TP041
TP042
TP043
TP055
TP056
TP057
TP061
TP062
TP063
TP064
TP065
TP069
JS82
A1
A2
A3
SOS
ABL
SOS3
FBP
H-DRV
EW
HBLK
H-SYNC
VD
DGSDY
TUNER GND
TUNER GND
NC
STBY 7V
STAND BY GND
P_BTL 40V
AC ON/OFF
C_BTL 40V
-20V
GND (SOUND)
-20V
GND (SOUND)
+20V
GND (SOUND)
+20V
TO D1
GND
SOS (140V/AV-AMP)
GND
ABL
GND
SOS3 (CONV)
GND
GND
20V
GND
20V
FBP
20V
H-DRV
20V
HD/SD
TO D2
EW
HBLK (FROM CONV)
GND
H-SYNC (FROM CONV)
GND
HD (TO CONV)
GND
VD (TO CONV)
GND
C_VP
GND
C_SDA
GND
C_SCL
GND
VS
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8

22.5. A-Board schematic 3 of 4



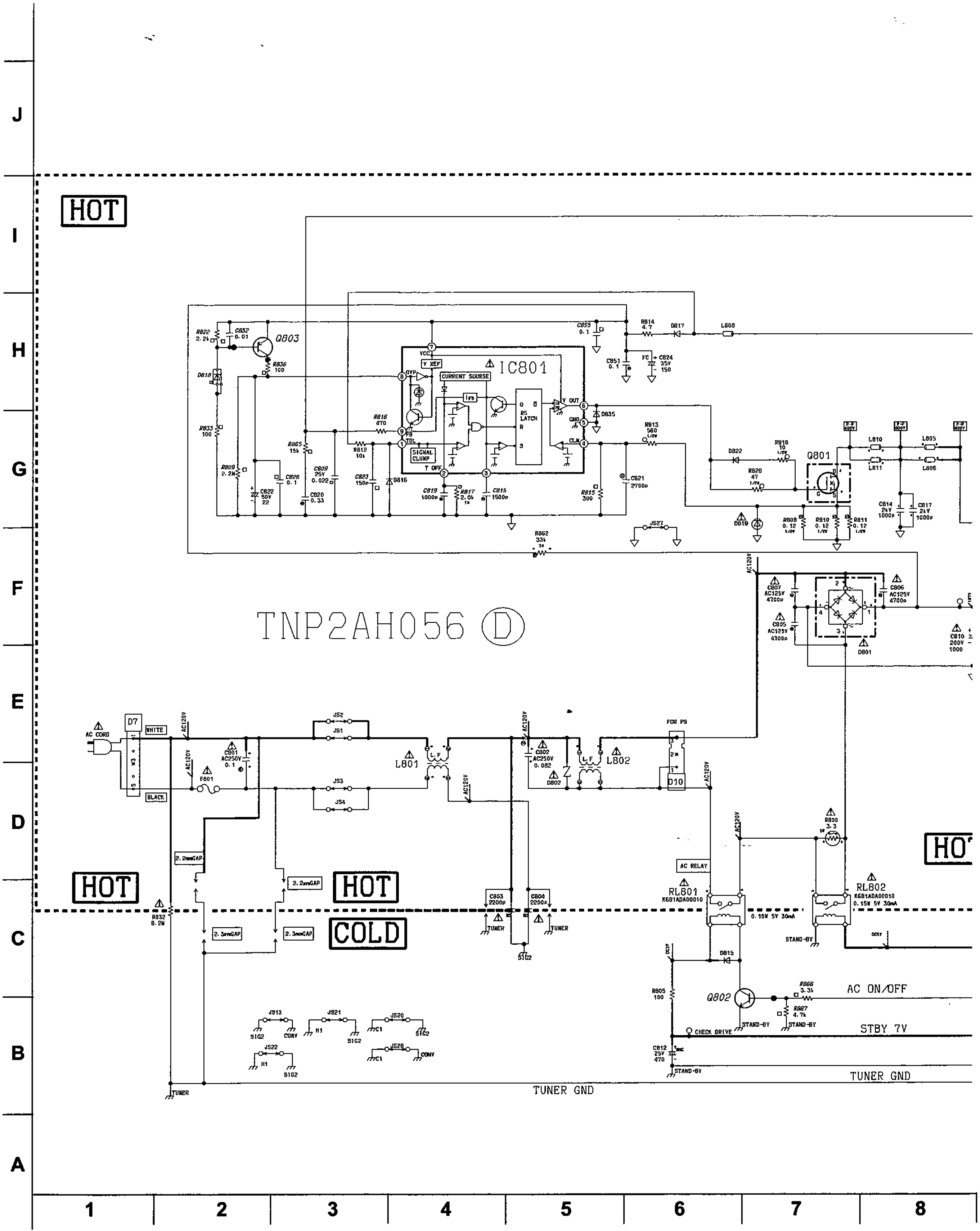
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
From Sub Power
A30
L2821
L2822
JS39
TP137
TP142
L2820
JS91
L2309
C2234
C2220
Q2801
Q2802
R2853
R2855
R2854
R2850
R2856
R2857
10V
SUB
IC874
FOR GC2+ / GC2V
5V
IC873
2.5V
FOR GC2+ / GC2V
IC871
5V
FOR DC
FOR PCMCAI
FOR HDMI
FOR TUNER
FOR MTS
IC872
9V
FOR DG
FOR AUDIO
FOR TUNER
FOR HDMI
SHARP:3.5A/150kHz
DG_BOX
DG2
A32
HDMI_BOX
A51
DV1
FRONT SIDE
REAR SIDE
LG001
LG002
LG003
LG004
LG005
IC1101
EEPROM
A3
A4
L2310
L1103
L2311
L2312
L2313
L2314

22.6. A-Board schematic 4 of 4

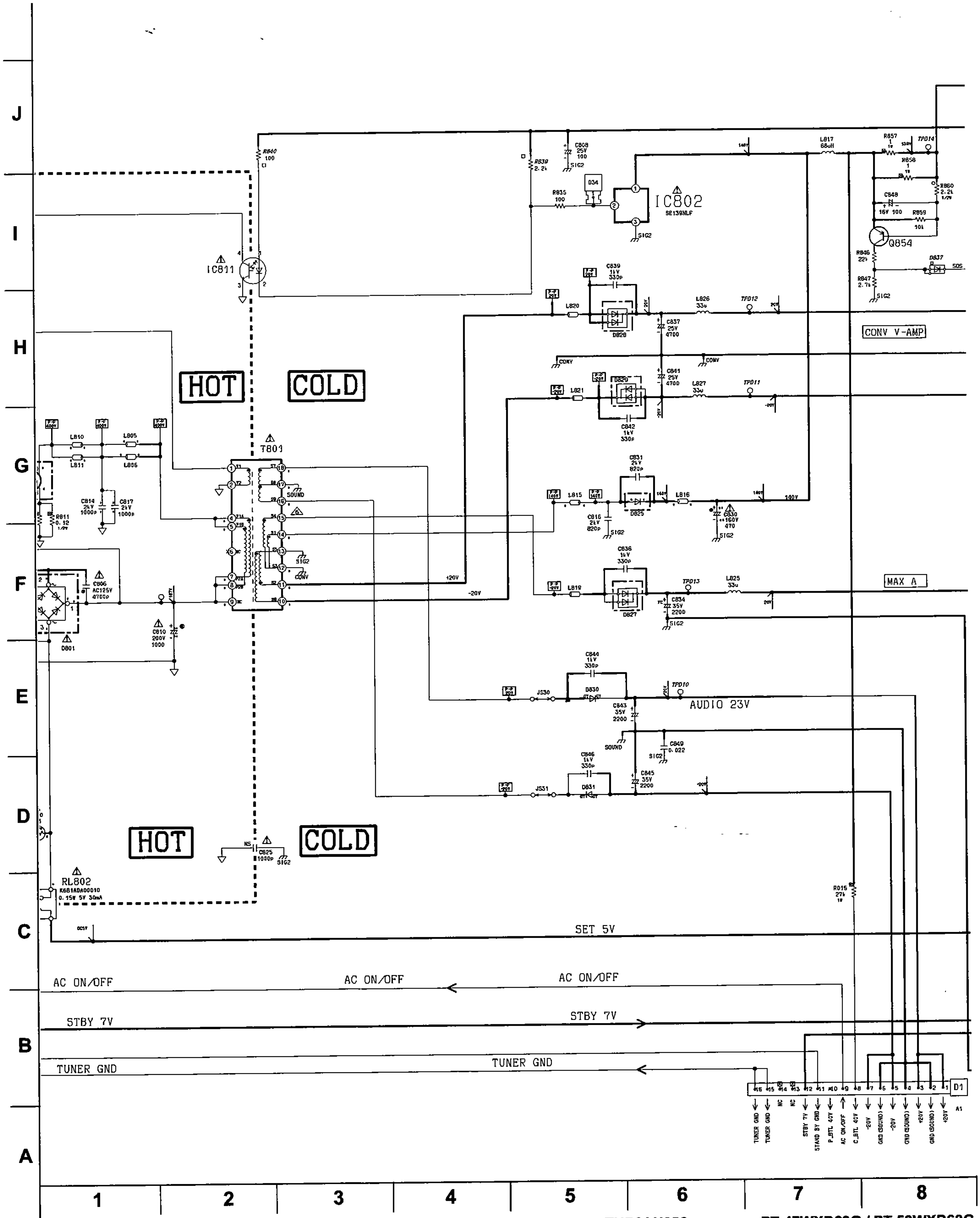

TNP2AH051 Ⓐ
IC2851
7.7V
V IN
VO S
V OUT
ON/OFF
GND
C2850 0.1
C2851 16V 330
R2851 1k
R2852
453
C2852 16V 330
C2853 0.1
JS41
SUB
R2857 JW
TP139
TP140
TP141
TP113
A31
DG1
V_SAW
EHT_ADJ
DAF-CUT
EHTFB
HHS DET
SCL2 (DGMNC)
SDA2 (DGMNC)
DOSD_B
DOSD_G
DOSD_R
DOSDIYS
R2407 22
R2408 22
R2409 22
R2410 22
B-OUT
G-OUT
R-OUT
YM-OUT
GND
L2313 10u
C2236 6.3V 2200
C2223 16V 0.1
POD ON/OFF
LOSDYS
LOSDYM
LOSDR
LOSDG
LOSDB
LOSDH
LOSDY
C2238 16V 100
L2314 10u
C2225 16V 0.1
R805 10
D895
L854
866
300P
VD (TO CONV)
HD (TO CONV)
(FORM CONV)
(FROM CONV)
H-SYNC
HBLK
R2411 22
R2412 22
R2413 22
R2414 22
EW
STBY 7V
STAND BY GND
AC ON/OFF
H-DRV
FBP
SOS3 (CONV)
ABL -> SOS
SOS (140VAV-AMP) -> 5V
5V -> STBY3.3V
SDA1 -> 2.5V
SCL1 -> 2.5V
VP -> 2.5V
STBY 3.3V -> ABL
NC -> 5V
5V -> PLL
5V -> VP
2.5V -> 5VPP
SDA2
SCL2
2.5V -> RMT
2.5V -> FA
TP114
TP115
TP118
TP116
TP117
TPOPLL
C2226 16V 0.1
C2239 16V 100
C2224 16V 0.1
C2326 6.3V 3300
2.5V
5V
R2373 100
L1102
EEPROM
SLV [A0]
IIC1
VCC
WP
SCL
SDA
A0
A1
A2
VSS
IC1101
R2372 100
R2371 100
C028 0.01
SOS
D2815
R2858 2.7k
D2816
R2860 10k
R2859 1k
Q2803
TP127
R2420 100
R2421 100
R2422 100
R2423 100
R2424 100
R2425 100
R2426 100
C2589 0.1
C2599 0.1
TP112
TP111
TP110
TP109
TP108
TP107
TP106
TP105
TP104
TP102
TP101
A10
TO BUSSCON
C_WP
C_SDA
C_SCL
YBB
RM IN
SDA2
SCL2
SDA1
SCL1
GND
FA
STBY 5V
R2580 220
R2578 10
R2501 270
R2505 33
R2503 470
R2563 180
R2502 470
Q2525
Q2502
Q2505
R2542 1.2k
R2538 1.2k
R2504 220
R2519 10
R2577 0
Q2508
R
G
B
R2584 10
R2419 220
R2509 270
R2506 33
R2590 180
R2508 470
R2510 470
Q2528
Q2503
Q2506
R2543 1.2k
R2539 1.2k
R2507 220
R2570 10
R2608 0
Q2509
C2587 0.01
C2588 16V 1000
R2571 10
R2513 33
R2511 270
C2227 16V 0.1
C2507 16V 100
L2502 10
R2573 220
R2541 1.2k
R2537 1.2k
R2520 10
R2579 0
Q2522
Q2504
Q2501
R2576 180
R2514 470
R2512 470
R2515 220
Q2507
A15
LG1
GND
B
GND
R
GND
G
GND
GND
VM
GND (VM)
S-ABL
12V
TP128
TP129
TP130
TP131
TP133
TP132
AGARD_R
AGARD_G
TPAA005
TPA005
TPAA006
TPA006
L932
S-ABL DET
B-SLICE
R2568 6.8k
R2567 0
C2230 16V 1
R2569 8.2k
Q2510
18V
L931 10u
C931 50V 100
C936 0.01
R934 15k
R936 1.0k
R939 47
Q933
Q931
R932 27k
R930 33
VM
Q932
R935 8.2k
C933 16V 100
C935 1000P
R931 100
C932 0.01
R933 10k
R937 470
R938 390
R2516 47
Q2516
D896
R2517 1.8k
R2518 33
Q2517
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8

A-BOARD 4 of 4 TNP2AH051 PT-47WXD63G / PT-53WXD63G

22.7. D-Board schematic 1 of 6

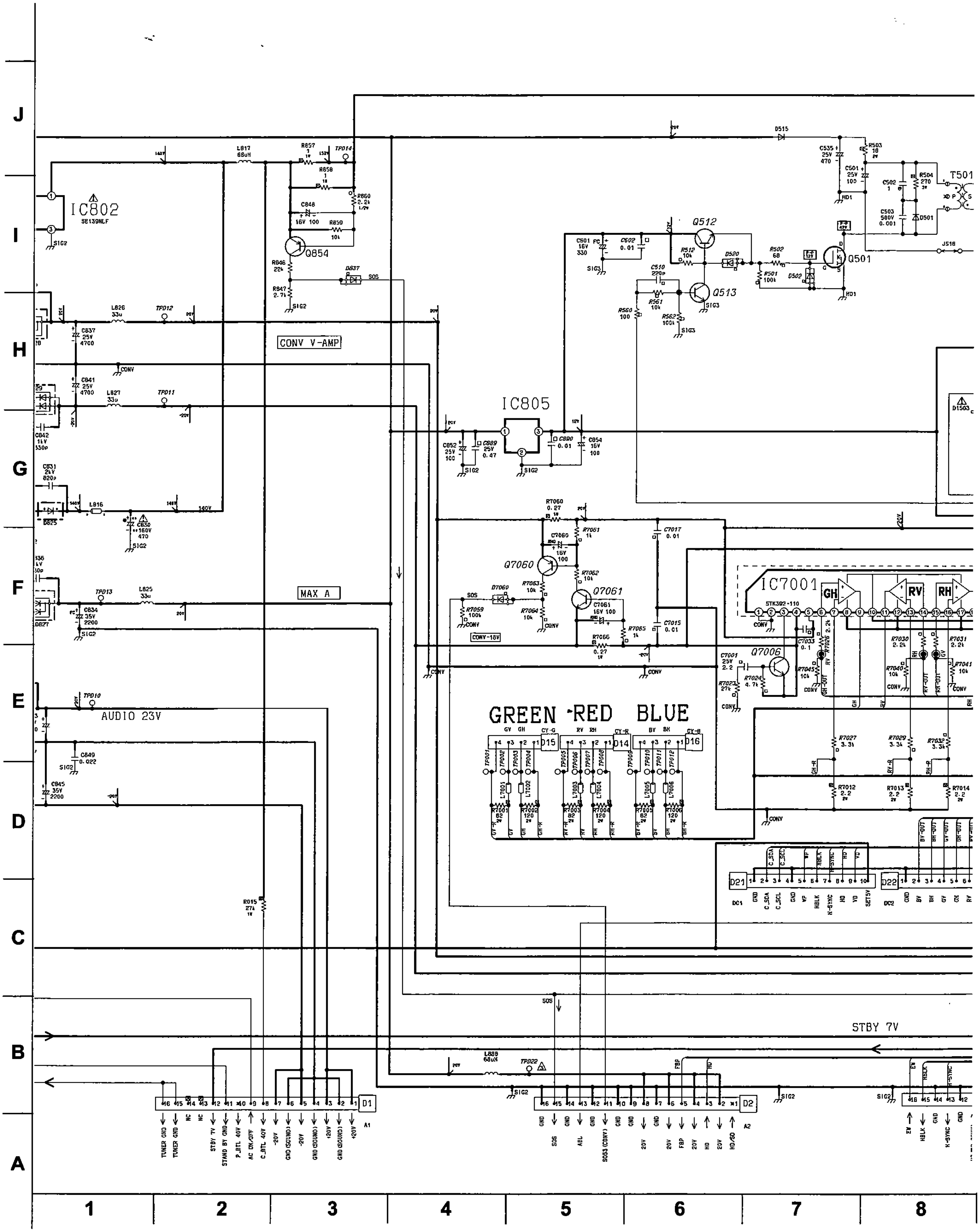

J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
HOT
HOT
HOT
COLD
TNP2AH056 Ⓓ
IC801
Q803
Q801
Q802
VCC
OVP
V REF
CURRENT SOURSE
IFB
RS LATCH
V OUT
GND
CLM
FB
TOL
SIGNAL CLUMP
T OFF
R822 2.2k
C832 0.01
R836 100
D818
R833 100
R809 2.2k
C822 50V 22
C826 0.1
R865 15k
C809 25V 0.022
C820 0.33
R816 470
R812 10k
C823 150p
D816
C819 1000p
R817 2.0k
C815 1500p
C855 0.1
C851 0.1
C824 35V 150
R814 4.7
D817
L808
D835
R813 560
C821 2700p
R815 300
R862 33k
JS27
D822
R818 10
R820 47
D819
R808 0.12
R810 0.12
R811 0.12
L810
L811
L805
L806
C814 2kV 1000p
C817 2kV 1000p
C807 AC125V 4700p
C805 AC125V 4700p
C806 AC125V 4700p
D801
C810 200V 1000
AC CORD
D7
WHITE
BLACK
AC120V
C801 AC250V 0.1
F801
JS2
JS1
JS3
JS4
L801
C802 AC250V 0.082
D802
L802
FOR P9
D10
R832 8.2M
2.2mmGAP
2.3mmGAP
C803 2200p
C804 2200p
TUNER
SIG2
AC RELAY
RL801
K6B1ADA00010
0.15W 5V 30mA
RL802
K6B1ADA00010
0.15W 5V 30mA
R800 3.3
STAND-BY
D815
R805 100
R866 3.3k
R867 4.7k
AC ON/OFF
STBY 7V
CHECK DRIVE
C812 25V 470
TUNER GND
JS13
JS21
JS20
JS22
JS28
CONV
H1
C1

22.8. D-Board schematic 2 of 6

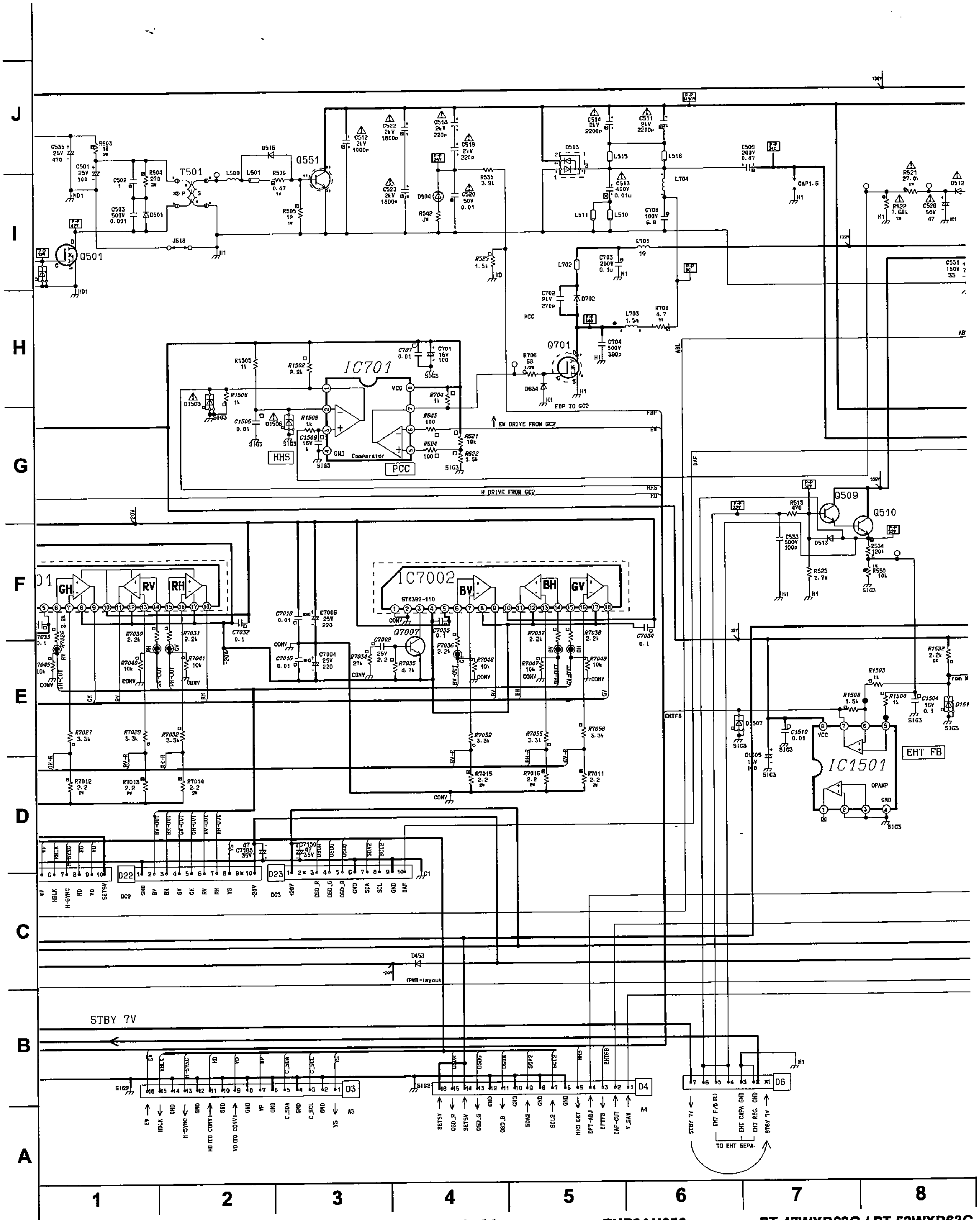

J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
HOT
COLD
HOT
COLD
T801
IC811
IC802
SE139NLF
Q854
R840 100
R839 2.2k
R835 100
C808 25V 100
D34
L817 68uH
R857
R858
R860 2.2k
C848 16V 100
R859 10k
R846 22k
R847 2.7k
D837
5D5
C839 1kV 330p
L820
D828
L826 33u
TPD12
C837 25V 4700
CONV V-AMP
CONV
C841 25V 4700
L821
D829
L827 33u
TPD11
C842 1kV 330p
C831 2kV 820p
L815
D825
L816
C830 160V 470
C816 2kV 820p
C836 1kV 330p
L819
D827
TPD13
L825 33u
C834 35V 2200
MAX A
120V
-20V
140V
SOUND
SIG2
L810
L811
L805
L806
C814 2kV 1000p
C817 2kV 1000p
R811 0.12
C806 AC125V 4700p
C810 200V 1000
D801
C844 1kV 330p
J530
D830
TPD10
C843 35V 2200
AUDIO 23V
C849 0.022
C846 1kV 330p
J531
D831
C845 35V 2200
C825 1000p
RL802
K6B1ADA00010
0.15W 5V 30mA
R015 27k
SET 5V
AC ON/OFF
AC ON/OFF
AC ON/OFF
STBY 7V
STBY 7V
TUNER GND
TUNER GND
D1
TUNER GND
TUNER GND
NC
NC
STBY 7V
STAND BY GND
P_BTL 40V
AC ON/OFF
C_BTL 40V
-20V
GND (SOUND)
-20V
GND (SOUND)
+20V
GND (SOUND)
+20V

D-BOARD **2 of 6** **TNP2AH056** **PT-47WXD63G / PT-53WXD63G**

22.9. D-Board schematic 3 of 6

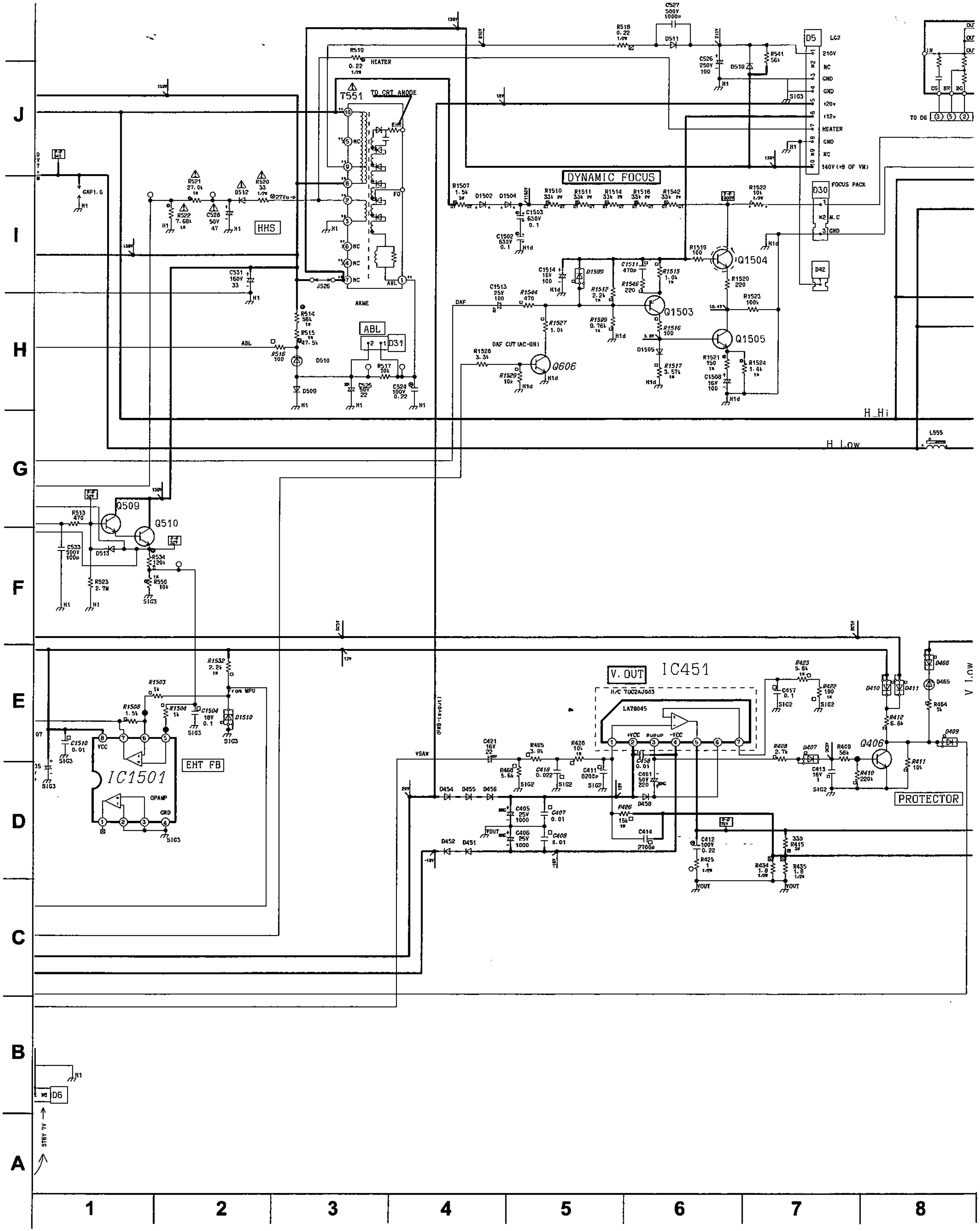

J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
IC802
5E139NLF
SIG2
L817
68uH
R857
R858
R860
C848
R859
TP014
Q854
R846
22k
R847
2.7k
D837
SOS
L826
33u
TP012
C837
25V
4700
CONV V-AMP
C841
25V
4700
L827
33u
TP011
C842
C831
2kV
820p
L816
D825
C830
160V
470
L825
33u
TP013
C834
35V
2200
MAX A
D827
TP010
AUDIO 23V
C849
0.022
C845
35V
2200
R015
27k
D515
C535
R503
C501
C502
R504
T501
C503
D501
Q512
C601
C602
R512
D520
R502
R501
D502
Q501
J516
C510
R561
Q513
R560
R562
IC805
C852
C889
C890
C854
D1503
R7060
C7060
R7061
C7017
Q7060
R7062
Q7061
R7063
D7060
R7059
R7064
C7061
R7065
C7015
R7066
CONV-18V
IC7001
STK392-110
GH
RV
RH
C7033
R7026
R7030
R7031
C7001
Q7006
R7045
R7040
R7041
R7023
R7024
GREEN -RED BLUE
D15
D14
D16
R7027
R7029
R7032
R7012
R7013
R7014
D21
D22
SOS
STBY 7V
L888
68uH
TP022
D1
D2
TUNER GND
TUNER GND
NC
NC
STBY 7V
STAND BY GND
P_BTL 40V
AC ON/OFF
C_BTL 40V
-20V
GND(SOUND)
-20V
GND(SOUND)
+20V
GND(SOUND)
+20V
SOS
AEL
SOS3(CONV)
20V
20V
FBP
20V
HD
20V
HD/SO
HBLK
H-SYNC
GND
C_SDA
C_SCL
VP
N-SYNC
VD
SET5V
BH
GV
GH
RV

22.10. D-Board schematic 4 of 6

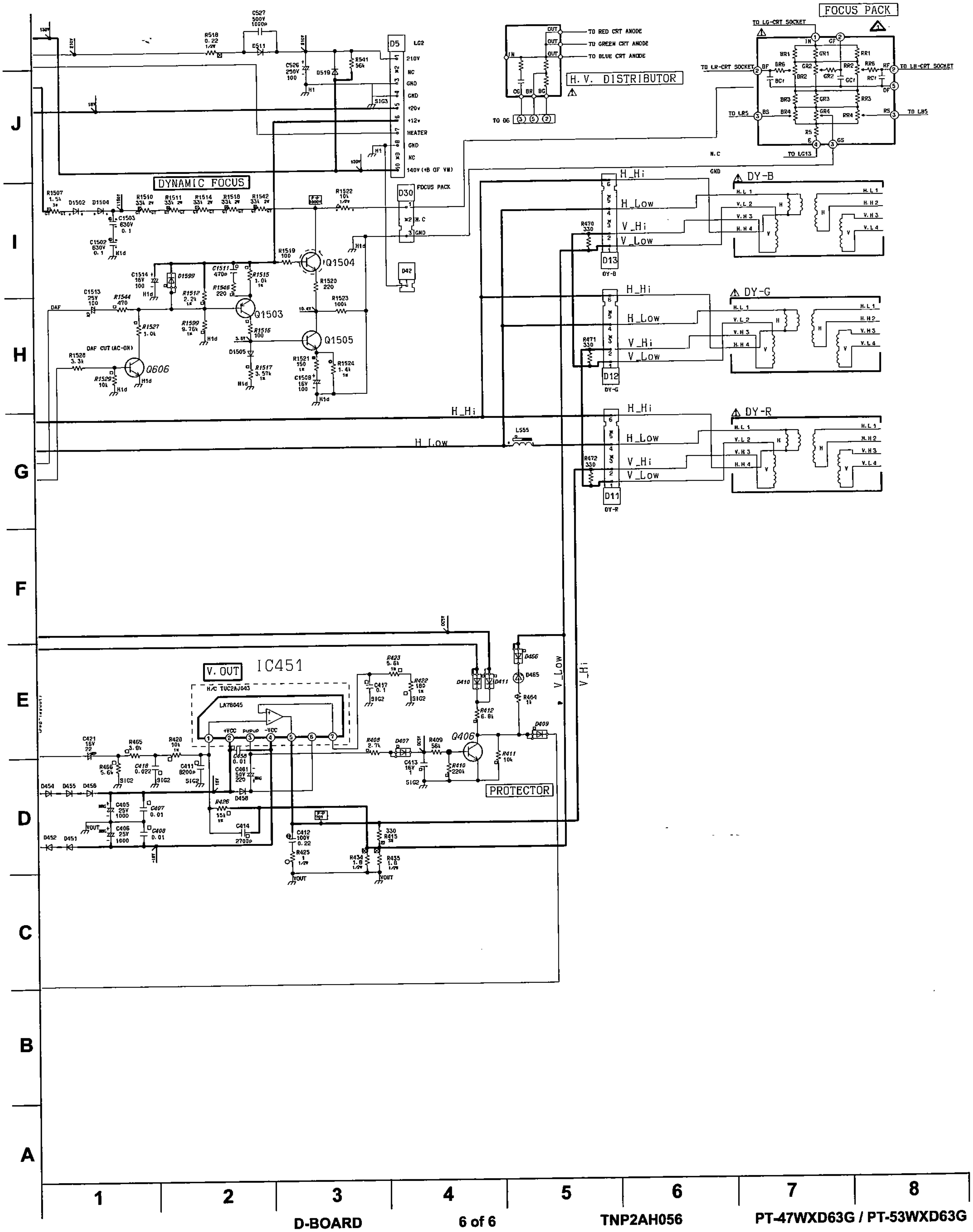


J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
T501
Q551
Q501
Q701
IC701
HHS
PCC
Comparator
H DRIVE FROM GC2
EW DRIVE FROM GC2
FBP TO GC2
Q509
Q510
IC7002
STK392-110
Q7007
GH
RV
RH
BV
BH
GV
IC1501
OPAMP
EHT FB
D22
D23
D3
D4
D6
STBY 7V
TO EHT SEPA.
(PWB-layout)

22.11. D-Board schematic 5 of 6

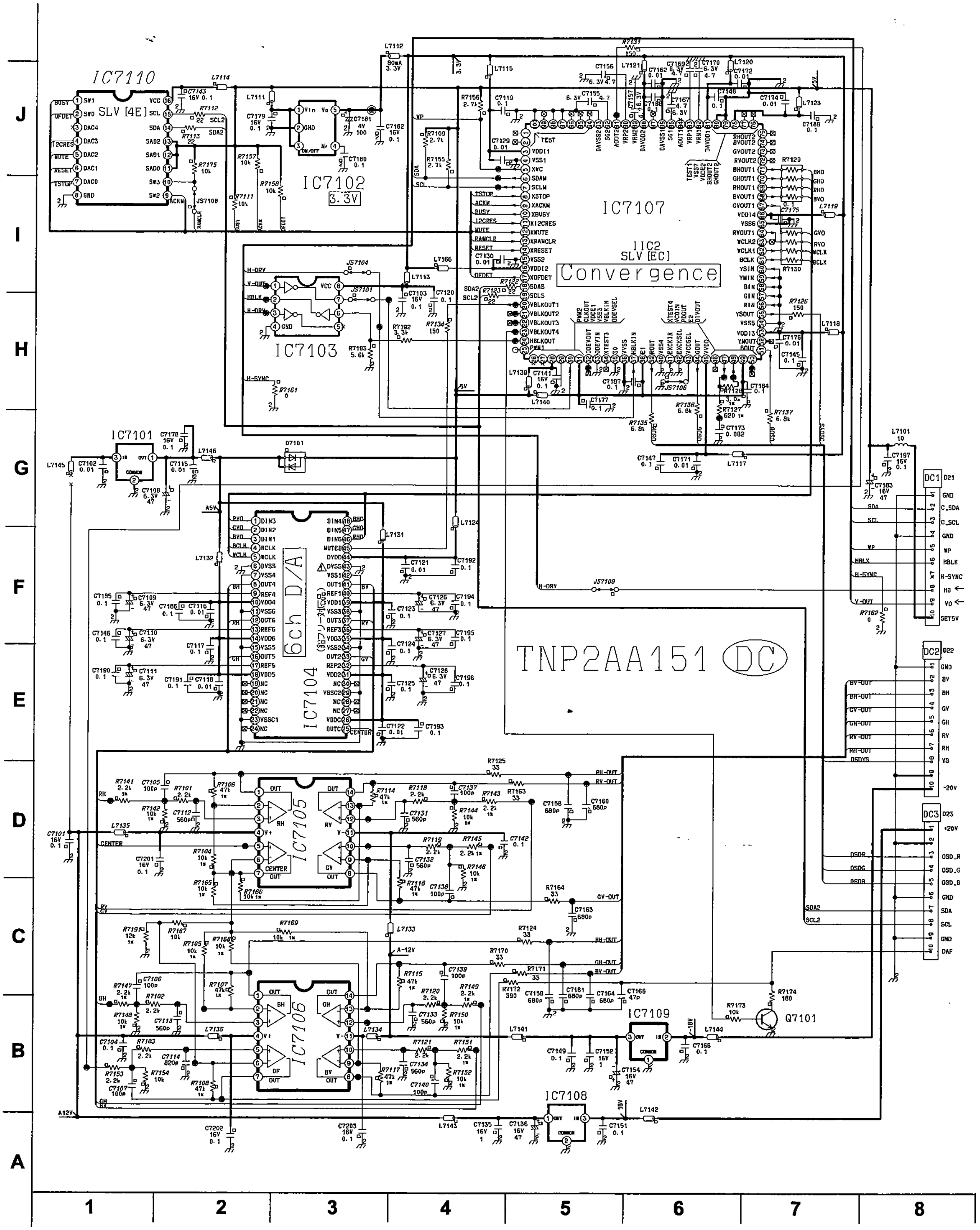

J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
T551
TO CRT ANODE
HEATER
R519 0.22
HHS
ABL
D31
AKWE
J526
D509
D510
R514 56k
R515 47.5k
R516 100
R517 10k
C531 160V 33
R521 27.0k
R520 33
D512
27Vo-p
R522 7.68k
C528 50V 47
CAP1.6
DYNAMIC FOCUS
R1507 1.5k
D1502
D1504
R1510 33k
R1511 33k
R1514 33k
R1518 33k
R1542 33k
R1522 10k
C1503 630V 0.1
C1502 630V 0.1
D30
FOCUS PACK
N.C
GND
D42
Q1504
Q1503
Q1505
Q606
R1519 100
R1520 220
R1523 100k
R1515 1.0k
R1546 220
R1512 2.2k
R1516 100
R1517 3.57k
R1521 150
R1524 1.4k
C1508 16V 100
R1527 1.0k
R1528 3.3k
R1529 10k
R1544 470
C1513 25V 100
C1514 16V 100
C1511 470p
D1509
D1505
R1509 9.76k
DAF
DAF CUT(AC-ON)
D5
LC2
210V
NC
GND
+20v
+12v
HEATER
140V(+B OF VM)
C527 500V 1000p
R518 0.22
D511
C526 250V 100
D518
R541 56k
SIG3
TO D6
CG
BR
BG
H_Hi
H_Low
L555
Q509
Q510
R513 470
C533 500V 100p
D513
R534 120k
R550 10k
R523 2.7M
IC1501
OPAMP
VCC
GND
EHT FB
R1503 1k
R1508 1.5k
R1504 1k
R1532 2.2k
C1504 16V 0.1
C1510 0.01
D1510
From MPU
V.OUT
IC451
LA78045
+VCC
PUPUP
-VCC
VSAW
C421 16V 22
R465 3.9k
R428 10k
R460 5.6k
C418 0.022
C411 8200p
C459 0.01
C451 50V 220
D458
R486 15k
C414 2700p
C412 100V 0.22
R425 1
C405 25V 1000
C406 25V 1000
C407 0.01
C408 0.01
D454
D455
D456
D452
D451
VOUT
R423 5.6k
C417 0.1
R422 180
D410
D411
D466
D465
R454 1k
R412 6.8k
D409
Q406
R411 10k
R408 2.7k
D407
R409 56k
C413 16V 1
R410 220k
R415 330
R434 1.8
R435 1.8
PROTECTOR
V_Low
D6
STBY 7V
SIG2
H1
H1d

22.12. D-Board schematic 6 of 6



DYNAMIC FOCUS
H.V. DISTRIBUTOR
FOCUS PACK
TO RED CRT ANODE
TO GREEN CRT ANODE
TO BLUE CRT ANODE
TO LG-CRT SOCKET
TO LR-CRT SOCKET
TO LB-CRT SOCKET
TO LR5
TO LB5
TO LG13
TO D6
D5
D30
D42
210V
NC
GND
120V
+12V
HEATER
140V (+B OF VM)
FOCUS PACK
Q1503
Q1504
Q1505
Q606
DAF
DAF CUT (AC-ON)
DY-B
DY-G
DY-R
D13
D12
D11
H_Hi
H_Low
V_Hi
V_Low
R470 330
R471 330
R472 330
L555
V.OUT
IC451
LA78045
Q406
PROTECTOR
A
B
C
D
E
F
G
H
I
J
1
2
3
4
5
6
7
8

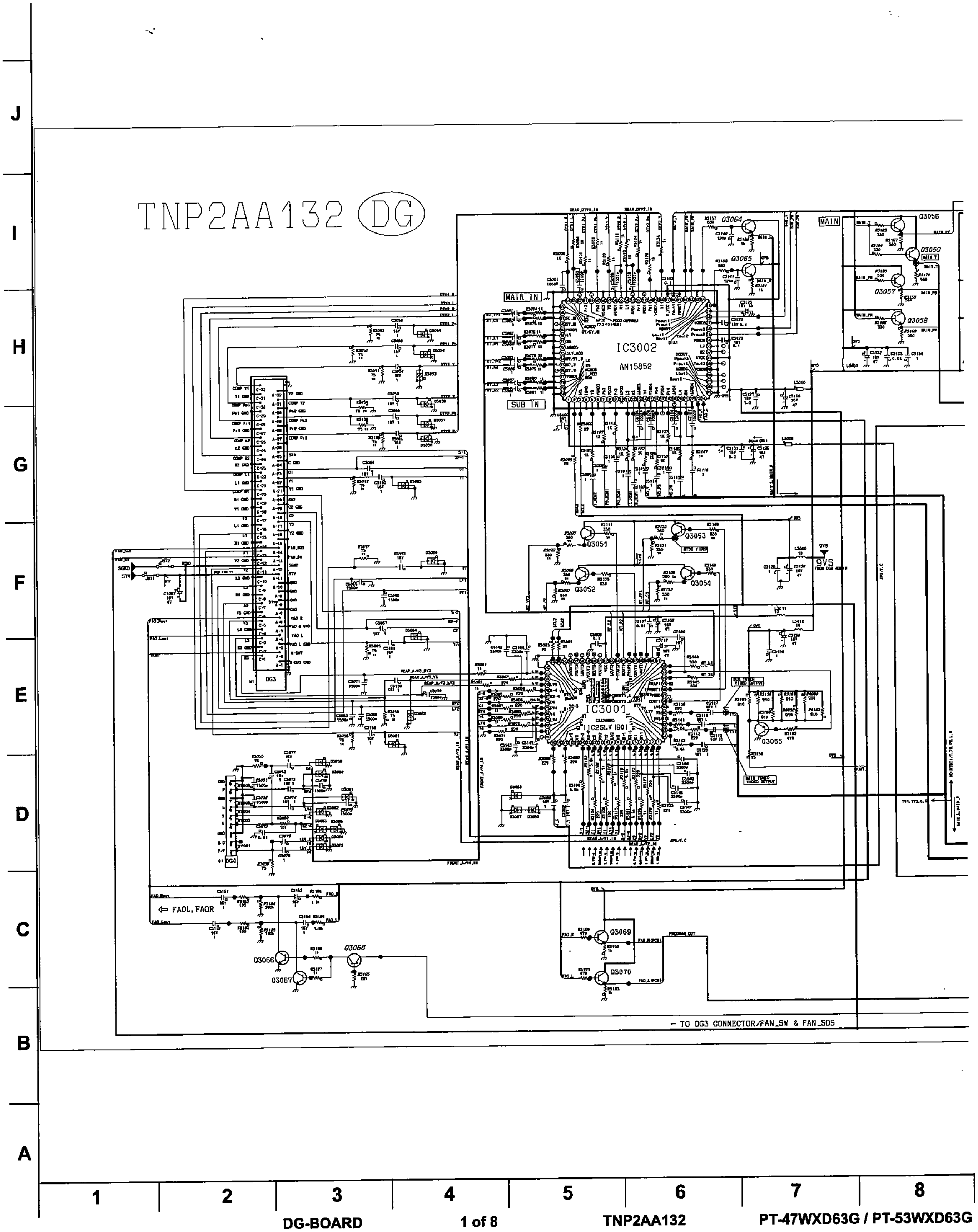
22.13. DC-Board schematic


IC7110
SLV [4E]
IC7102
3.3V
IC7107
IIC2
SLV [EC]
Convergence
IC7103
IC7101
IC7104
6ch D/A
TNP2AA151 DC
IC7105
IC7106
IC7109
IC7108
Q7101
D7101
DC1
GND
C_SDA
C_SCL
GND
WP
HBLK
H-SYNC
HD ←
VD ←
SET5V
DC2
GND
BV
BH
GV
GH
RV
RH
YS
-20V
DC3
+20V
OSD_R
OSD_G
OSD_B
GND
SDA
SCL
GND
DAF
A12V
A-12V
J
I
H
G
F
E
D
C
B
A

1	2	3	4	5	6	7	8

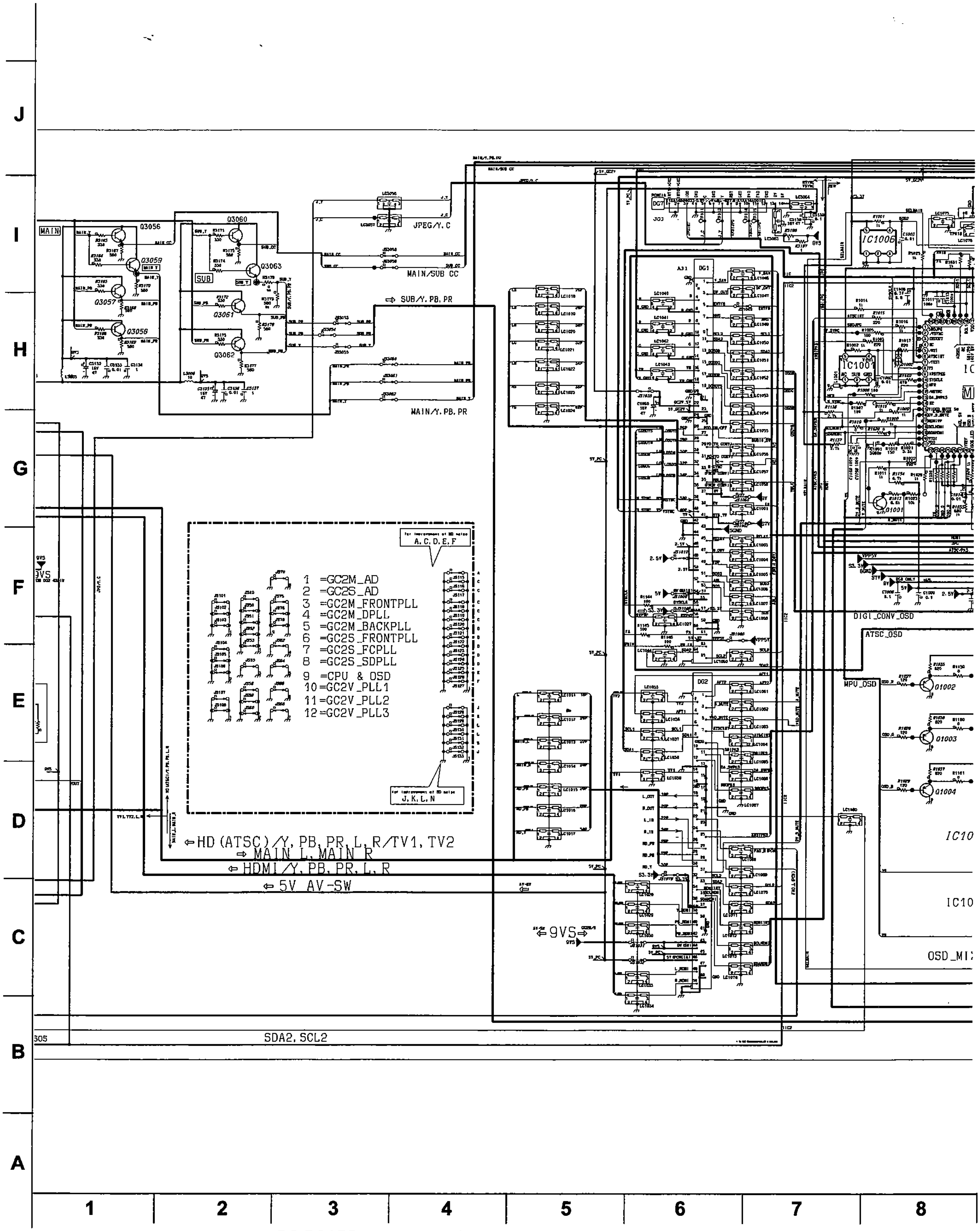
DC-BOARD **1 of 1** **TNP2AA151** **PT-47WXD63G / PT-53WXD63G**

22.14. DG-Board schematic 1 of 8

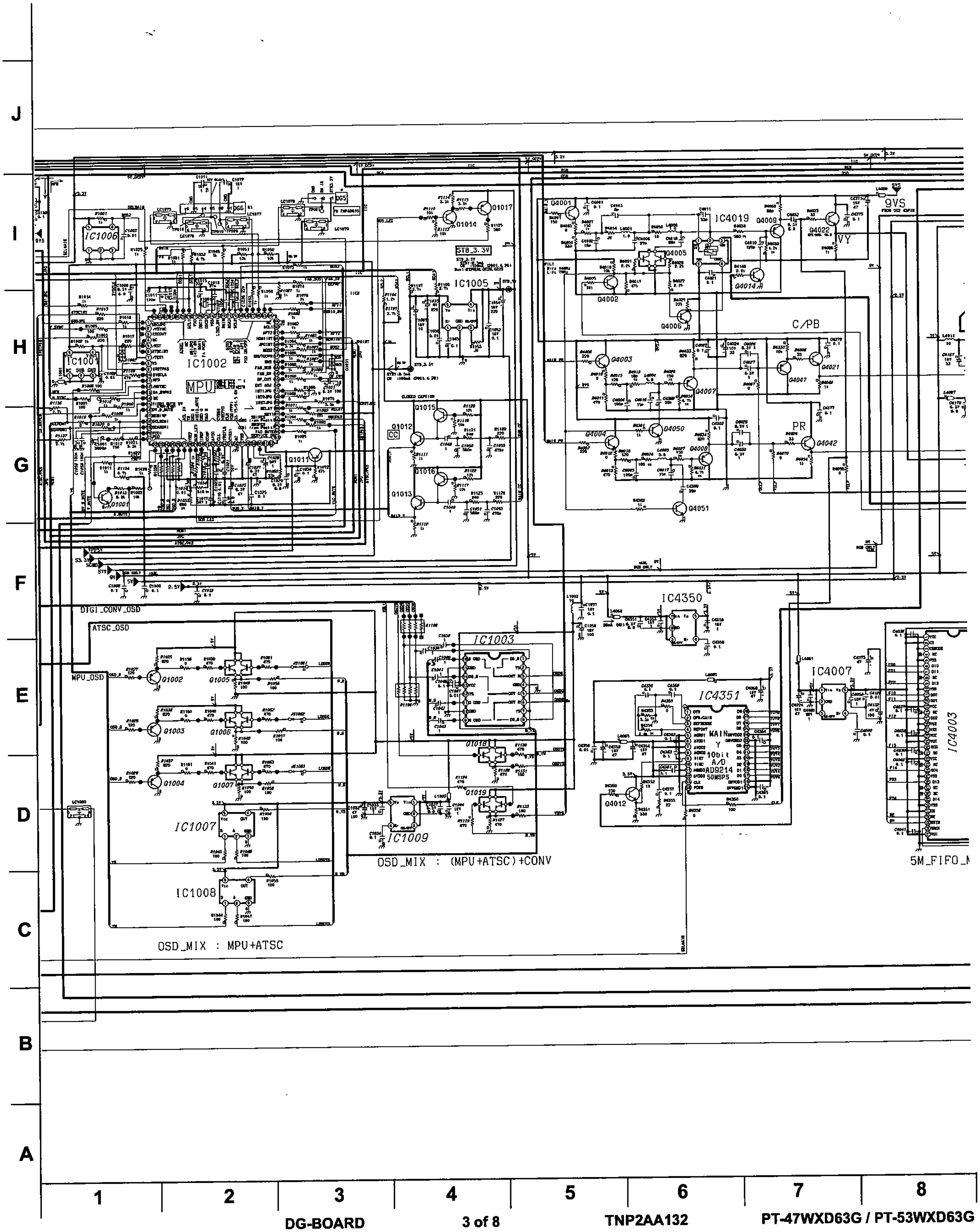


TNP2AA132 (DG)
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
MAIN IN
SUB IN
IC3002
AN15852
IC3001
C2SLV (90)
Q3064
Q3065
Q3056
Q3059
Q3057
Q3058
MAIN
Q3051
Q3052
Q3053
Q3054
Q3055
9VS
DG3
DG4
Q3066
Q3067
Q3068
Q3069
Q3070
⇐ FAOL, FAOR
← TO DG3 CONNECTOR/FAN_SW & FAN_SOS

22.15. DG-Board schematic 2 of 8


J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
MAIN
SUB
Q3056
Q3059
Q3057
Q3058
Q3060
Q3063
Q3061
Q3062
JPEG/Y,C
MAIN/SUB CC
⇨ SUB/Y,PB,PR
MAIN/Y,PB,PR
DG1
DG2
DG7
IC1006
IC1001
Q1001
Q1002
Q1003
Q1004
DIGI_CONV_OSD
ATSC_OSD
MPU_OSD
IC10
IC10
OSD_MI
A,C,D,E,F
J,K,L,N
1 =GC2M_AD
2 =GC2S_AD
3 =GC2M_FRONTPLL
4 =GC2M_DPLL
5 =GC2M_BACKPLL
6 =GC2S_FRONTPLL
7 =GC2S_FCPLL
8 =GC2S_SDPLL
9 =CPU & OSD
10=GC2V_PLL1
11=GC2V_PLL2
12=GC2V_PLL3
9VS
⇦HD(ATSC)/Y,PB,PR,L,R/TV1,TV2
⇨ MAIN L,MAIN R
⇦ HDMI/Y,PB,PR,L,R
⇦ 5V AV-SW
⇦9VS⇨
SDA2,SCL2
305

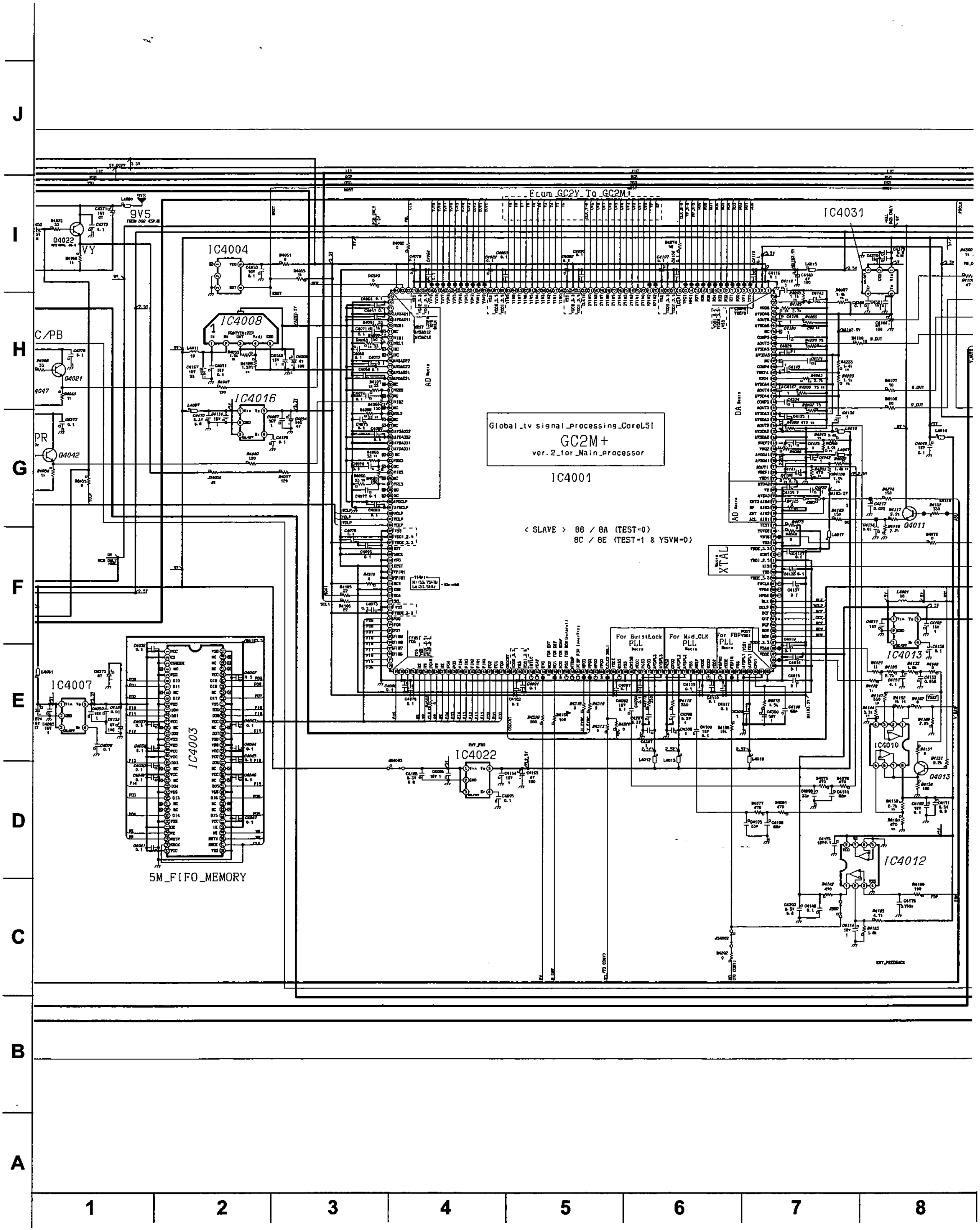
22.16. DG-Board schematic 3 of 8



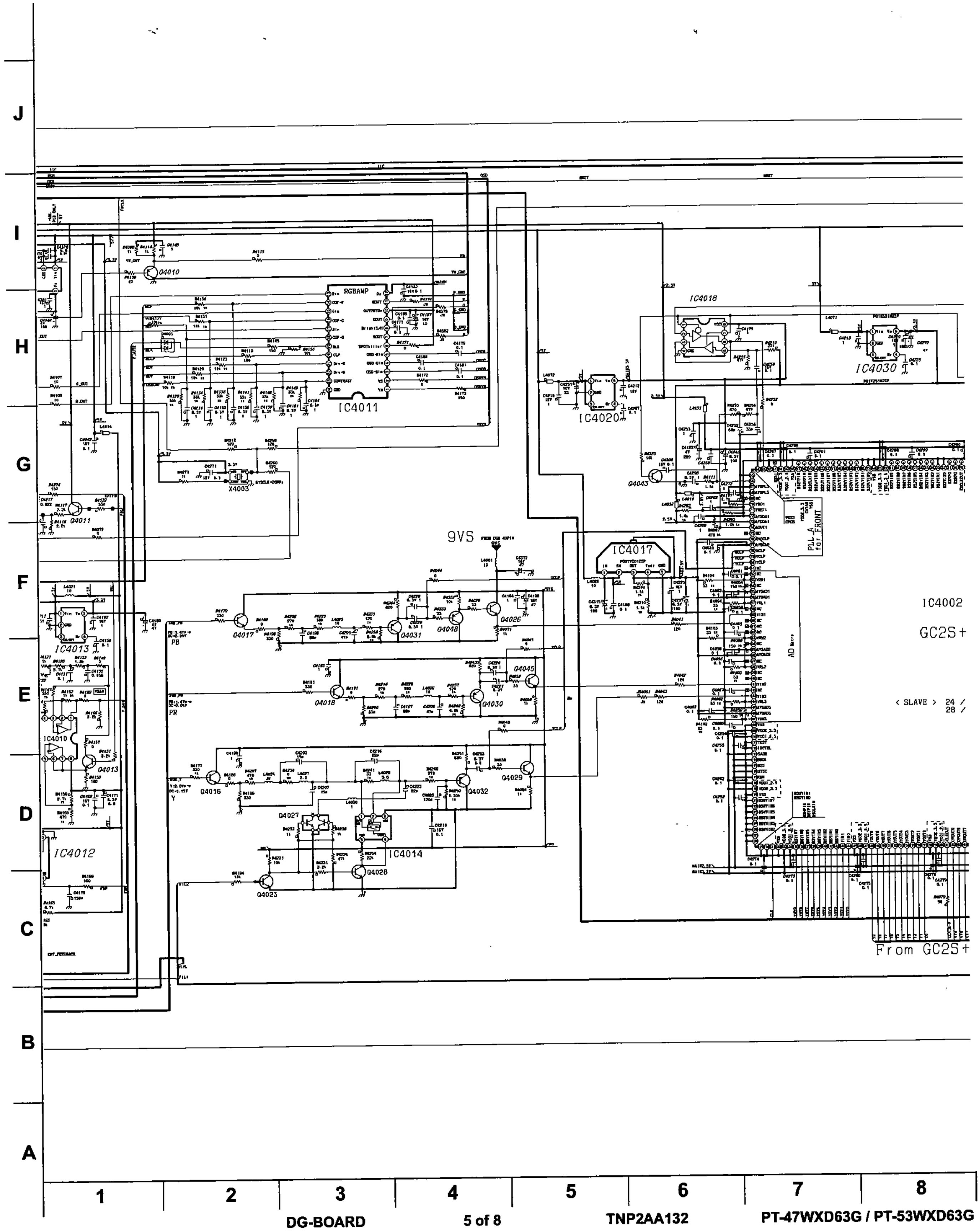
J
I
H
G
F
E
D
C
B
A
IC1006
IC1001
IC1002
MPU
IC1005
STB_3.3V
Q1017
Q1014
Q1015
Q1012
CC
Q1016
Q1013
Q1011
Q1001
DGG
DGS
Q4001
IC4019
Q4009
Q4022
VY
9VS
Q4005
Q4002
Q4014
Q4006
C/PB
Q4003
Q4007
Q4021
Q4047
PR
Q4004
Q4050
Q4008
Q4042
Q4051
DIGI_CONV_OSD
ATSC_OSD
MPU_OSD
Q1002
Q1005
Q1003
Q1006
Q1004
Q1007
IC1007
IC1008
IC1003
Q1018
Q1019
IC1009
OSD_MIX : (MPU+ATSC)+CONV
OSD_MIX : MPU+ATSC
IC4350
IC4351
MAIN Y 10bit A/D AD9214 50MSPS
Q4012
IC4007
IC4003
5M_FIFO_
1
2
3
4
5
6
7
8

DG-BOARD 3 of 8 TNP2AA132 PT-47WXD63G / PT-53WXD63G

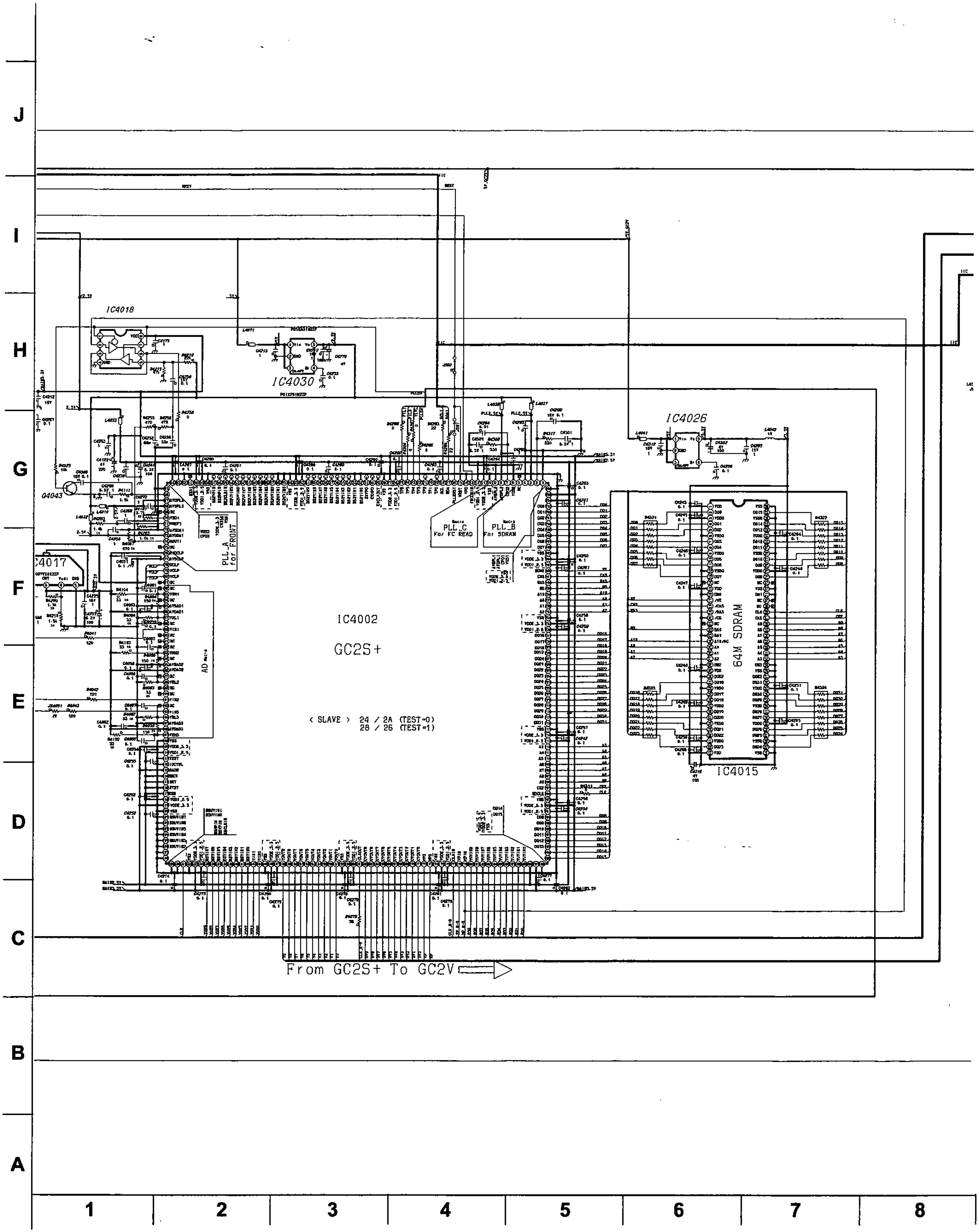
22.17. DG-Board schematic 4 of 8


J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
From GC2V To GC2M+
IC4031
9V5
VY
Q4022
IC4004
IC4008
C/PB
Q4021
IC4016
PR
Q4042
Global_tv signal_processing_CoreLSI
GC2M+
ver.2_for_Main_processor
IC4001
< SLAVE > 88 / 8A (TEST=0)
8C / 8E (TEST=1 & YSVM=0)
AD Macro
DA Macro
XTAL
Q4011
For BurstLock PLL
For Mid_CLK PLL
For FBP PLL
IC4013
IC4010
Q4013
IC4007
IC4003
5M_FIFO_MEMORY
IC4022
IC4012

22.18. DG-Board schematic 5 of 8

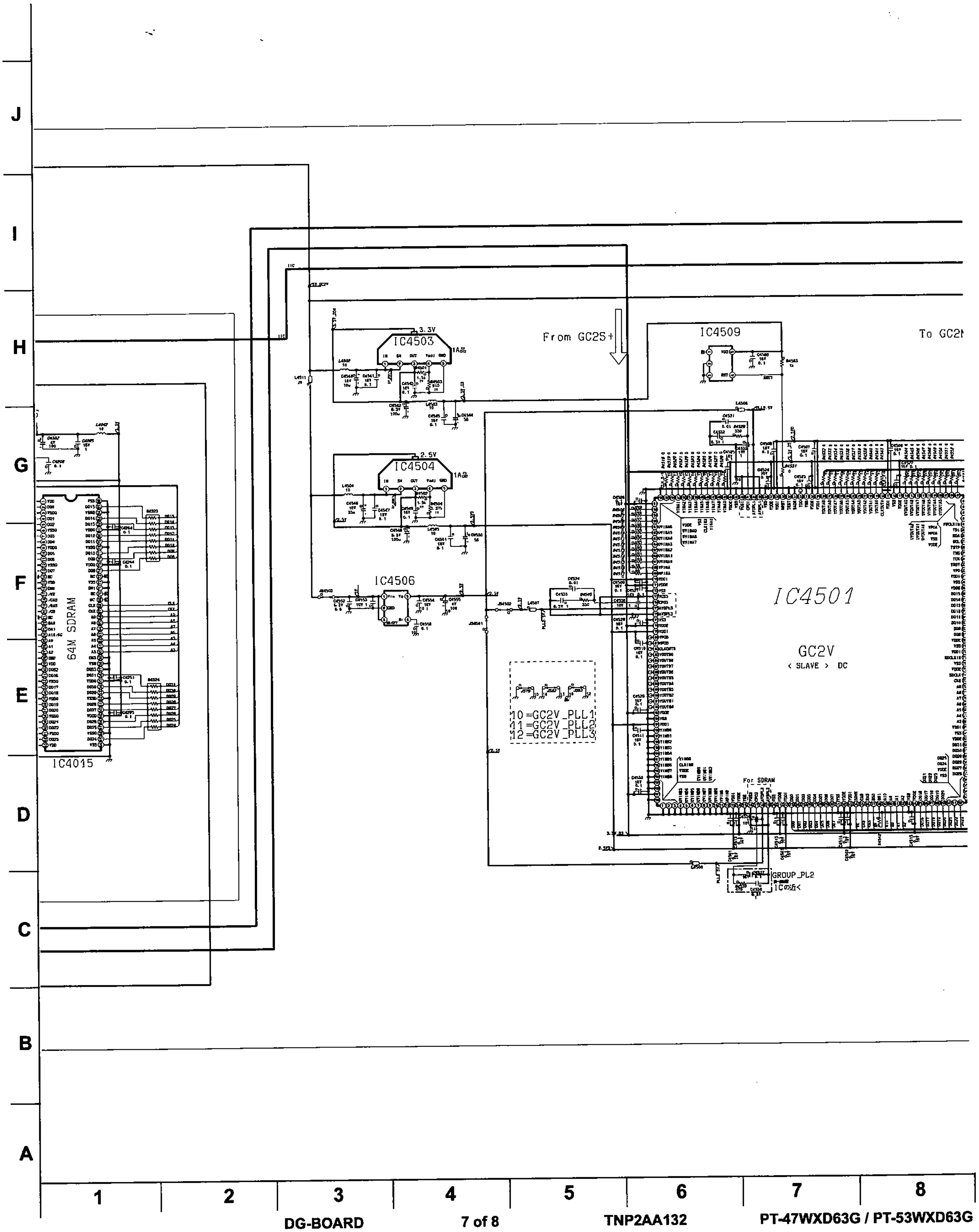

J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
Q4010
RGBAMP
IC4011
IC4018
IC4030
IC4020
X4003
Q4043
Q4011
9V5
IC4017
IC4002
GC2S+
PLL_A for FRONT
AD Macro
< SLAVE > 24 / 28 /
IC4013
PB
Q4017
Q4031
Q4048
Q4026
Q4045
PR
Q4018
Q4030
IC4010
Q4013
Y
Q4016
Q4027
IC4014
Q4032
Q4029
IC4012
Q4023
Q4028
From GC2S+

22.19. DG-Board schematic 6 of 8



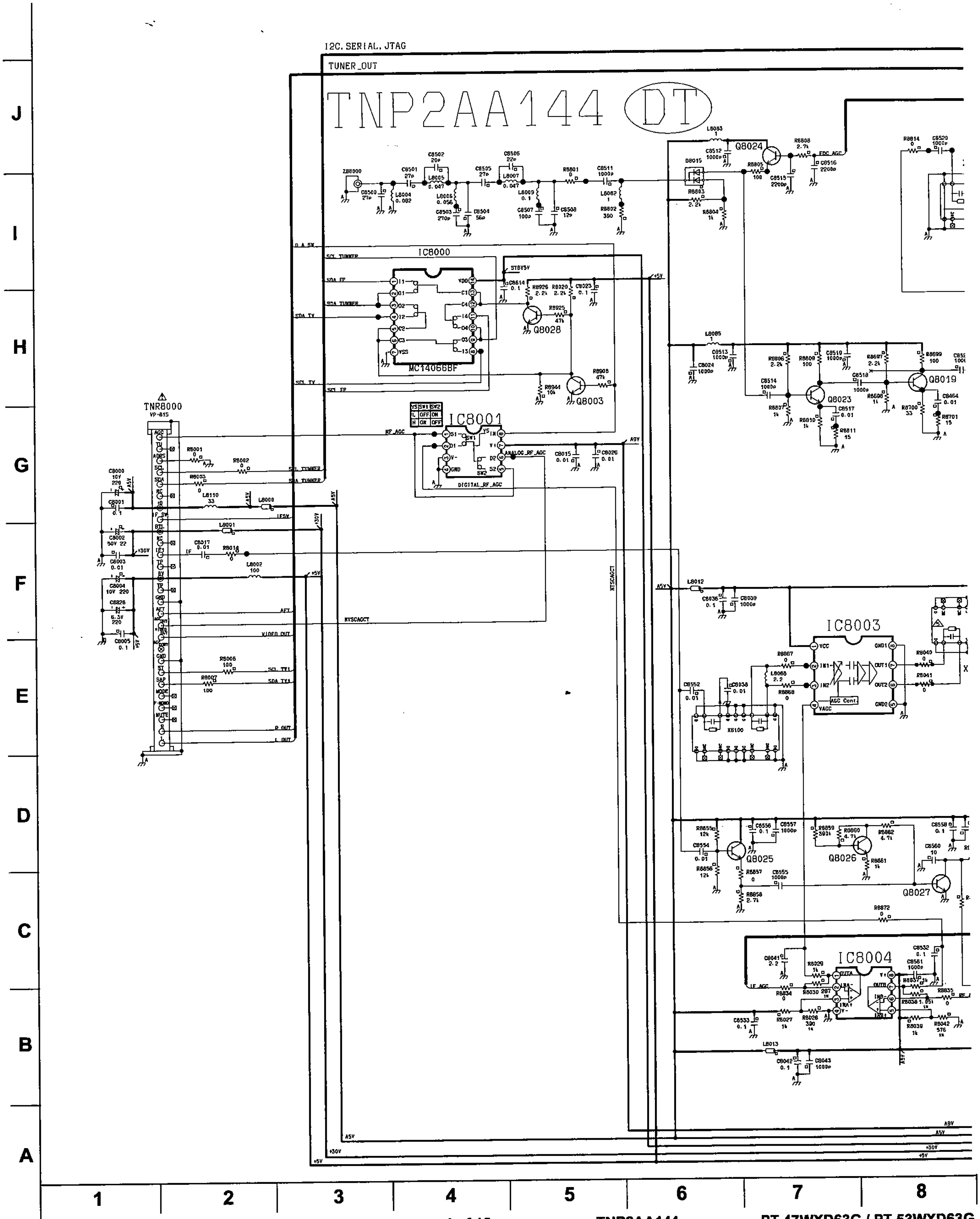
J
I
H
G
F
E
D
C
B
A
IC4018
IC4030
IC4026
IC4017
Q4043
IC4002
GC2S+
PLL_A For FRONT
PLL_C For FC READ
PLL_B For SDRAM
AD Macro
< SLAVE > 24 / 2A (TEST=0)
28 / 26 (TEST=1)
64M SDRAM
IC4015
From GC2S+ To GC2V
1
2
3
4
5
6
7
8

22.20. DG-Board schematic 7 of 8



J
I
H
G
F
E
D
C
B
A
IC4503
3.3V
IC4504
2.5V
IC4506
From GC25+
IC4509
To GC2
64M SDRAM
IC4015
IC4501
GC2V
< SLAVE > DC
10 =GC2V_PLL1
11 =GC2V_PLL2
12 =GC2V_PLL3
For SDRAM
GROUP_PL2
ICの近く
1
2
3
4
5
6
7
8

22.22. DT-Board schematic 1 of 15


J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
I2C, SERIAL, JTAG
TUNER_OUT
TNP2AA144
DT
TNR8000
VP-815
IC8000
MC14066BF
IC8001
IC8003
IC8004
Q8024
Q8028
Q8003
Q8023
Q8019
Q8025
Q8026
Q8027
X8100
RF_AGC
ANALOG_RF_AGC
DIGITAL_RF_AGC
NTSCAGCT
AFT
VIDEO_OUT
SCL_TUNNER
SDA_TUNNER
SCL_TV
SDA_TV
SCL_FP
SDA_FP
R_OUT
L_OUT
IF_AGC
STBY5V
A5V
A9V
+30V
+5V
IF5V
AGC Cont
VCC
VACC
GND1
GND2
IN1
IN2
OUT1
OUT2
ZB8000
L8003
L8005
L8012
L8013
L8110
L8000
L8001
L8002
D8015

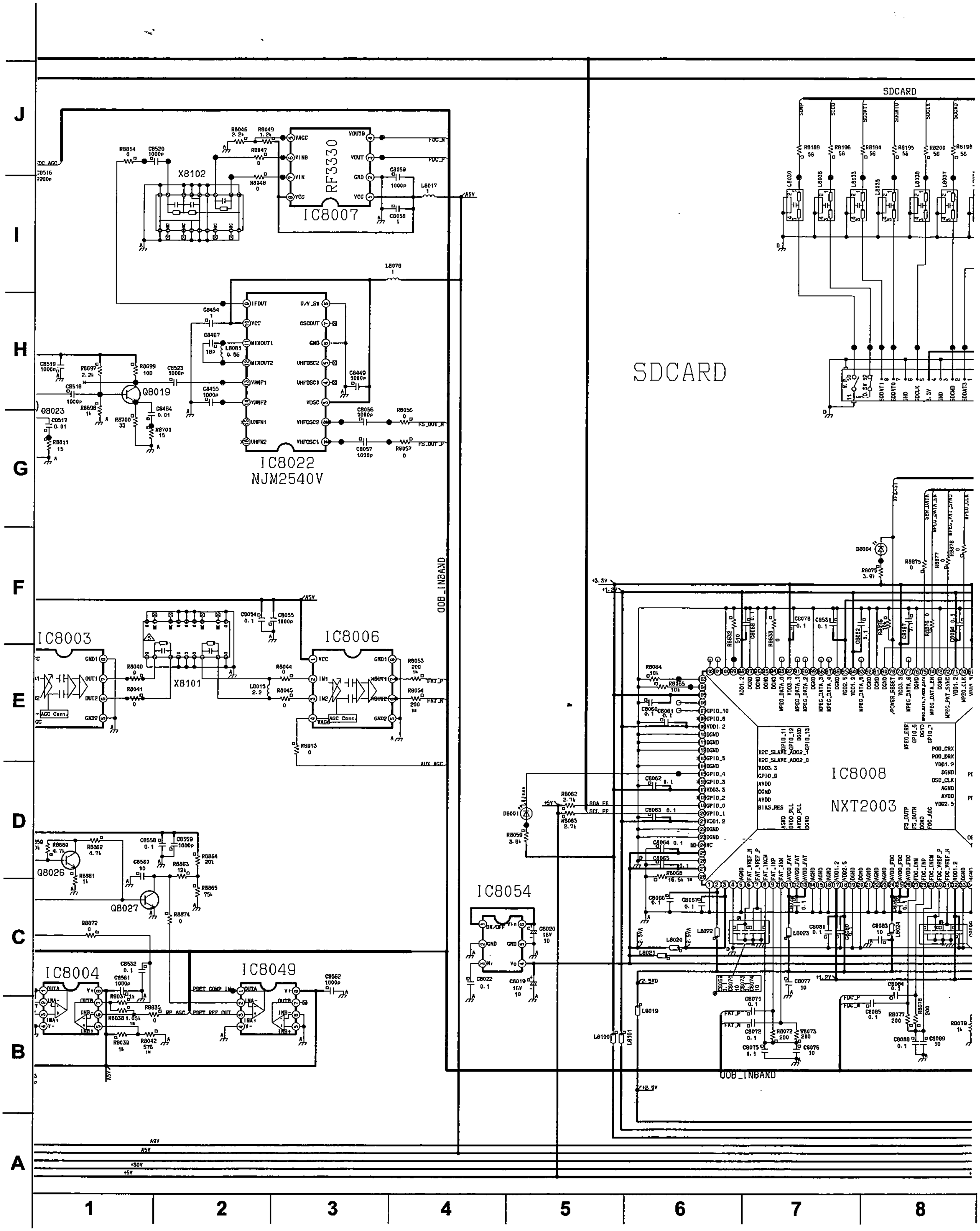
DT-BOARD

1 of 15

TNP2AA144

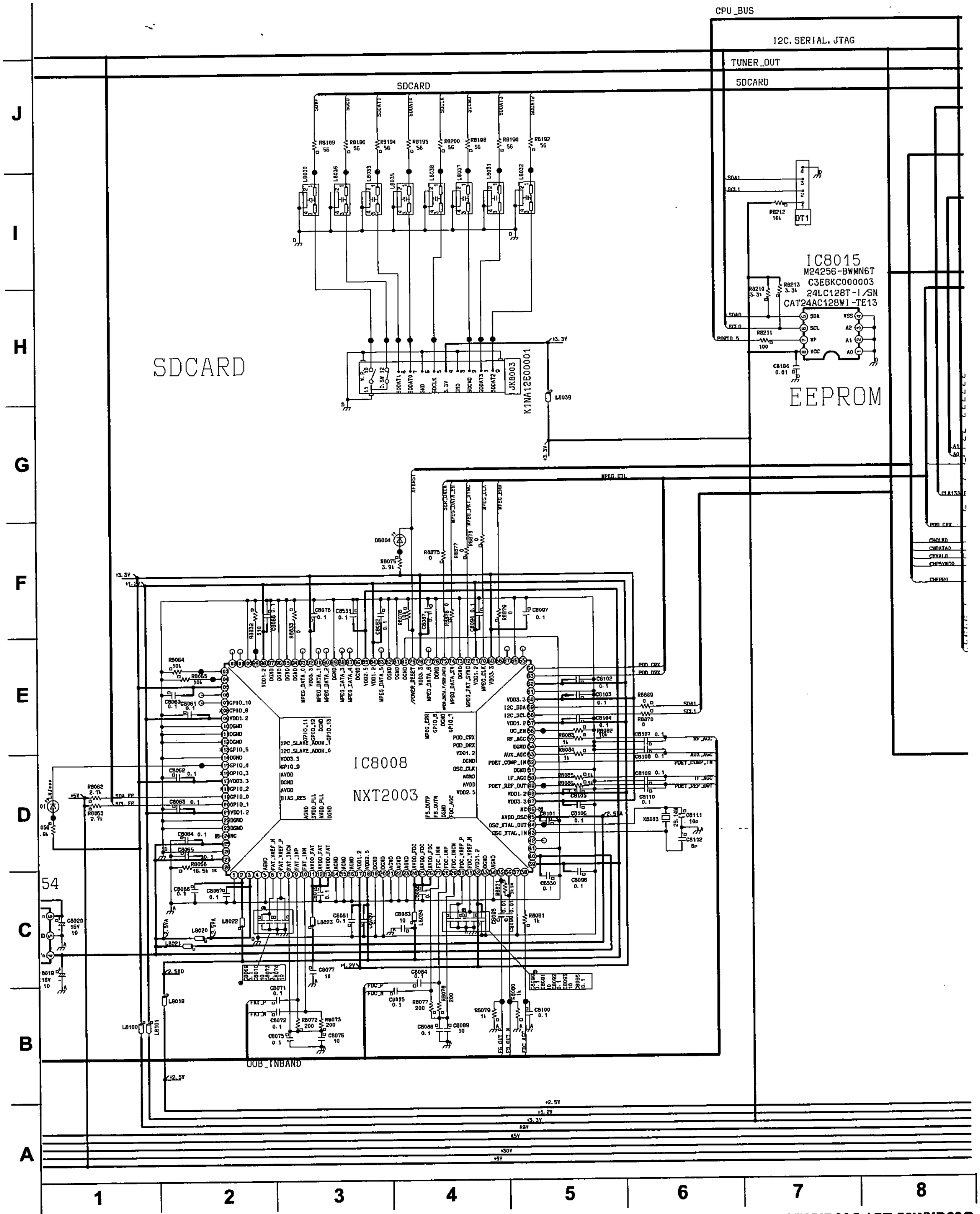
PT-47WXD63G / PT-53WXD63G

22.23. DT-Board schematic 2 of 15

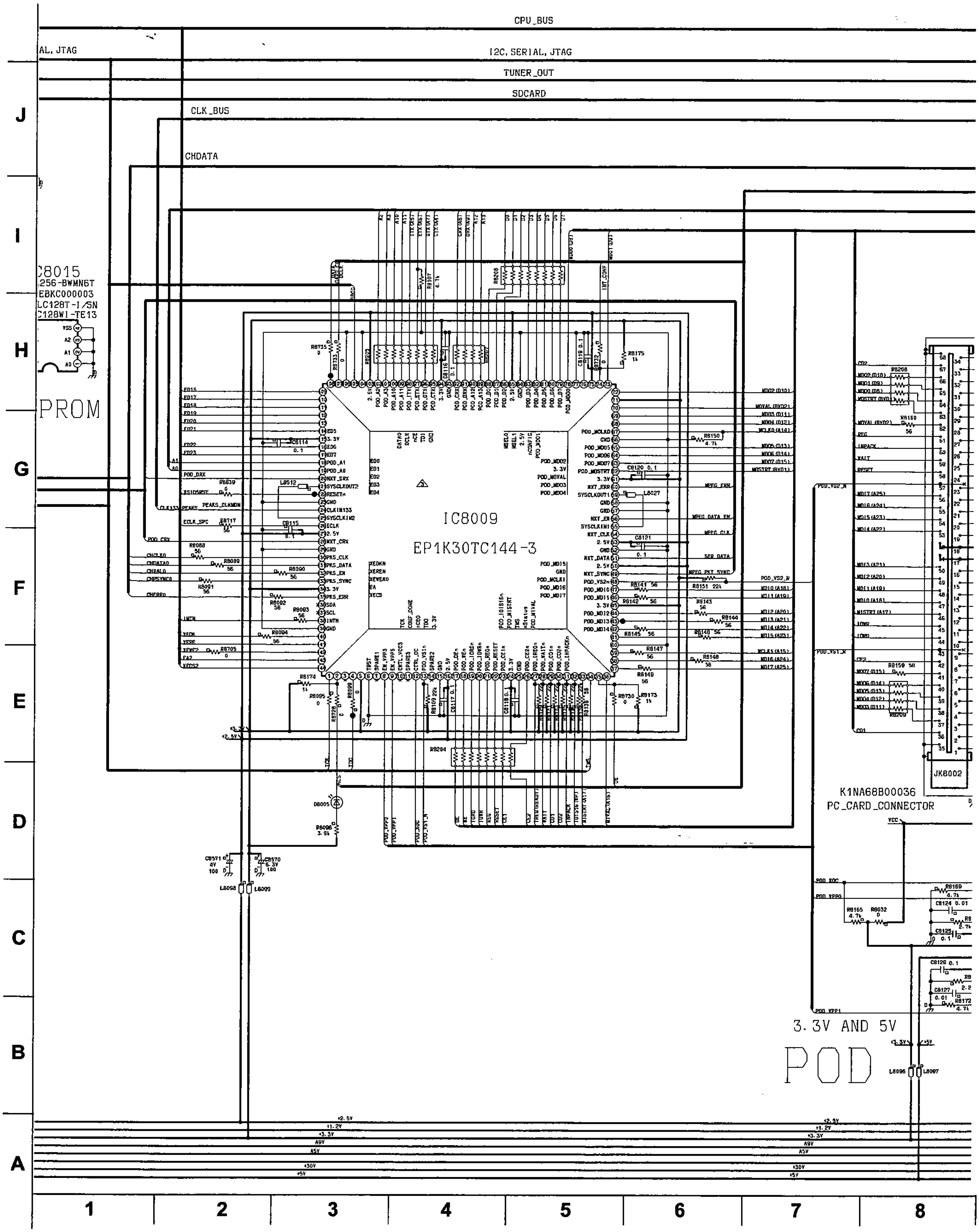


J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
SDCARD
IC8007
RF3330
X8102
IC8022
NJM2540V
Q8019
Q8023
IC8003
IC8006
X8101
OOB_INBAND
IC8054
IC8008
NXT2003
Q8026
Q8027
IC8004
IC8049
D8001
D8004
A9V
A5V
+30V
+5V
+3.3V
+1.2V
+2.5V
FDC_N
FDC_P
FS_OUT_N
FS_OUT_P
FAT_P
FAT_N
AUX_AGC
SDA_FE
SCL_FE
PDET_COMP_IN
PDET_REF_OUT
RF_AGC

22.24. DT-Board schematic 3 of 15

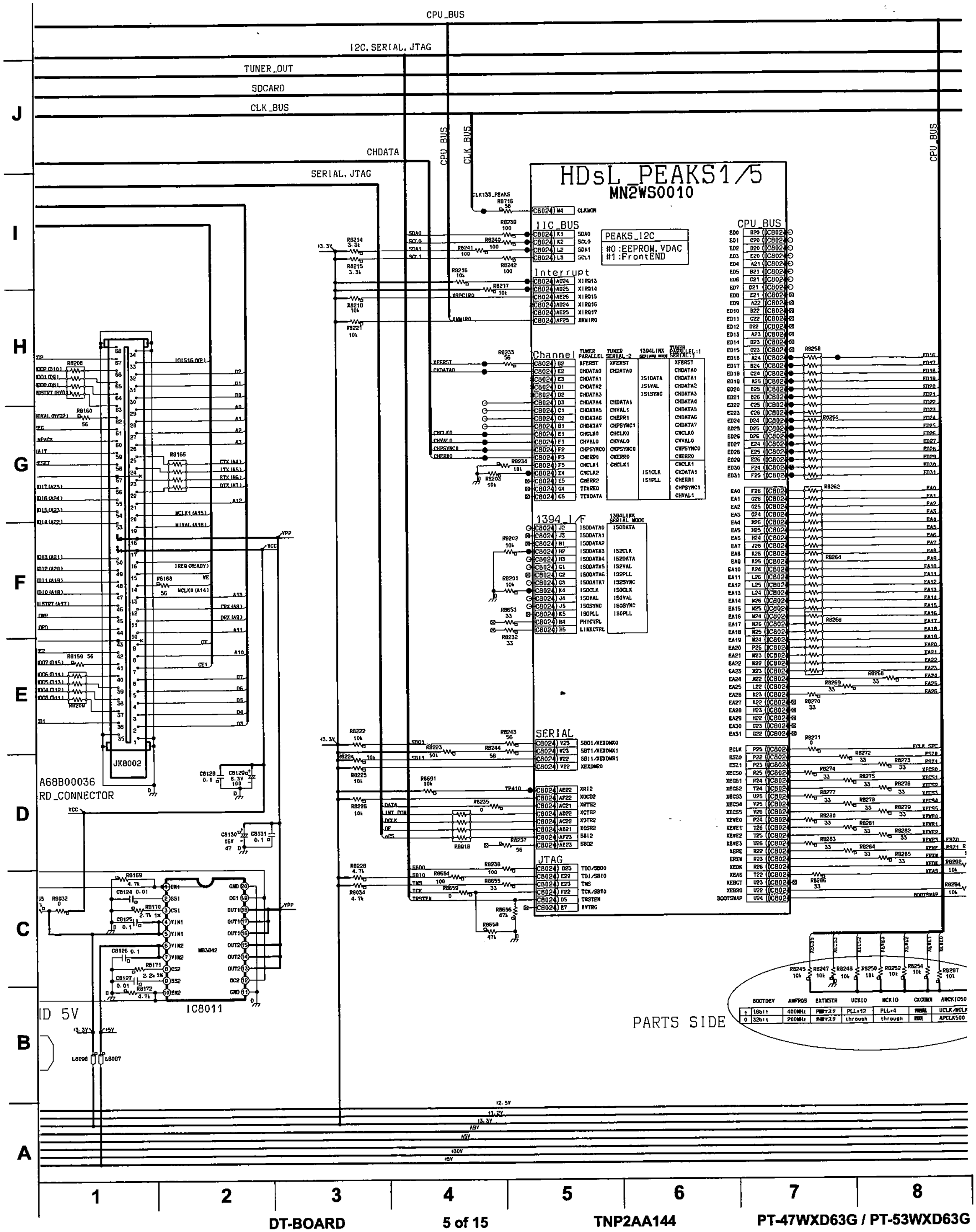

CPU_BUS
I2C, SERIAL, JTAG
TUNER_OUT
SDCARD
SDCARD
JK8003
K1NA12E00001
IC8015
M24256-BWMN6T
C3EBKC000003
24LC128T-I/SN
CAT24AC128WI-TE13
EEPROM
MPEG_CTL
IC8008
NXT2003
OOB_INBAND
+2.5V
+1.2V
+3.3V
A5V
A9V
+30V
+5V
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8

22.25. DT-Board schematic 4 of 15

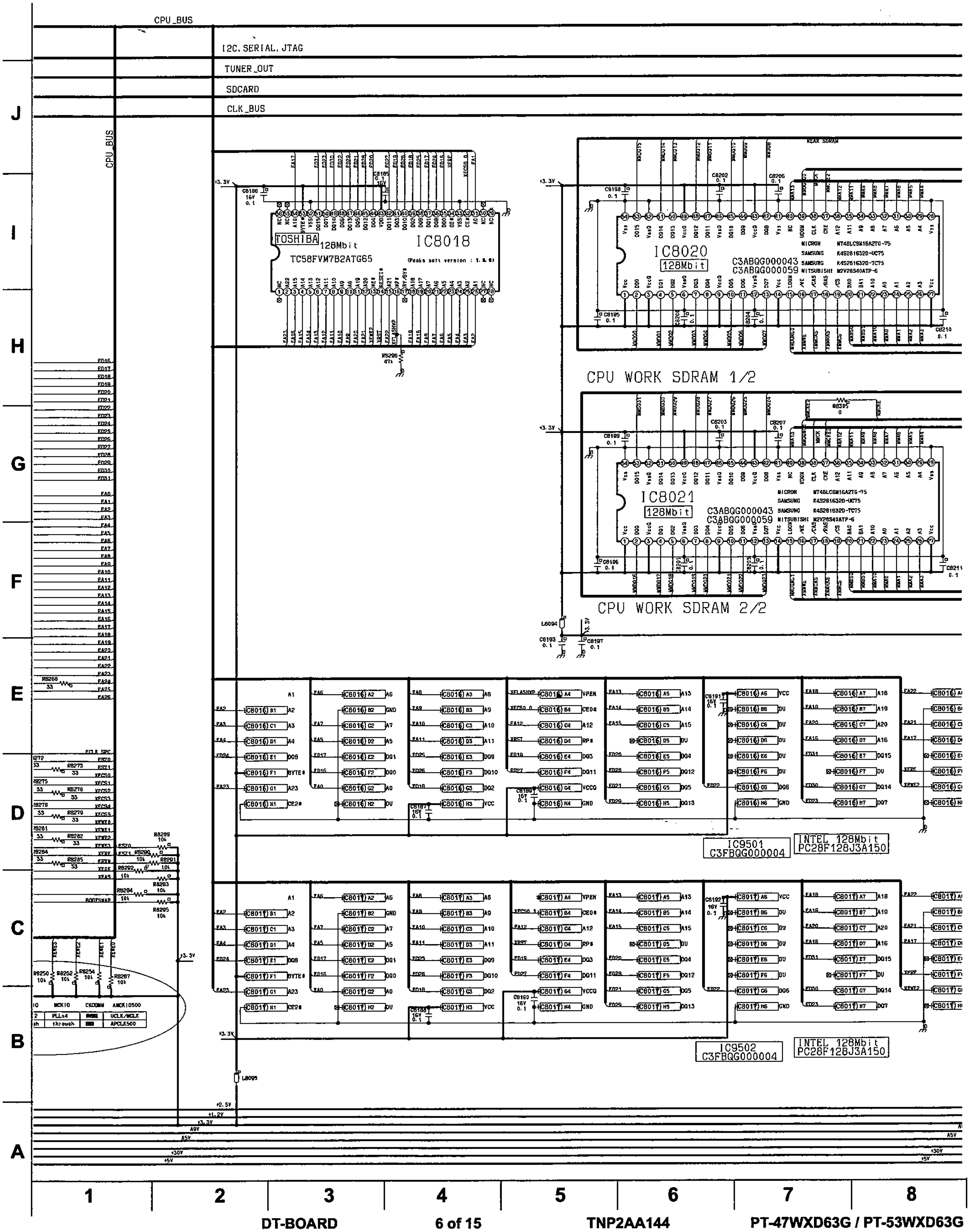


CPU_BUS
AL, JTAG
I2C, SERIAL, JTAG
TUNER_OUT
SDCARD
CLK_BUS
CHDATA
8015
256-BWMN6T
EBKC000003
LC128T-I/SN
C128W1-TE13
PROM
IC8009
EP1K30TC144-3
JK8002
K1NA68B00036
PC_CARD_CONNECTOR
3.3V AND 5V
POD
L8098
L8099
L8096
L8097
D8005
+2.5V
+1.2V
+3.3V
A9V
A5V
+30V
+5V
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8

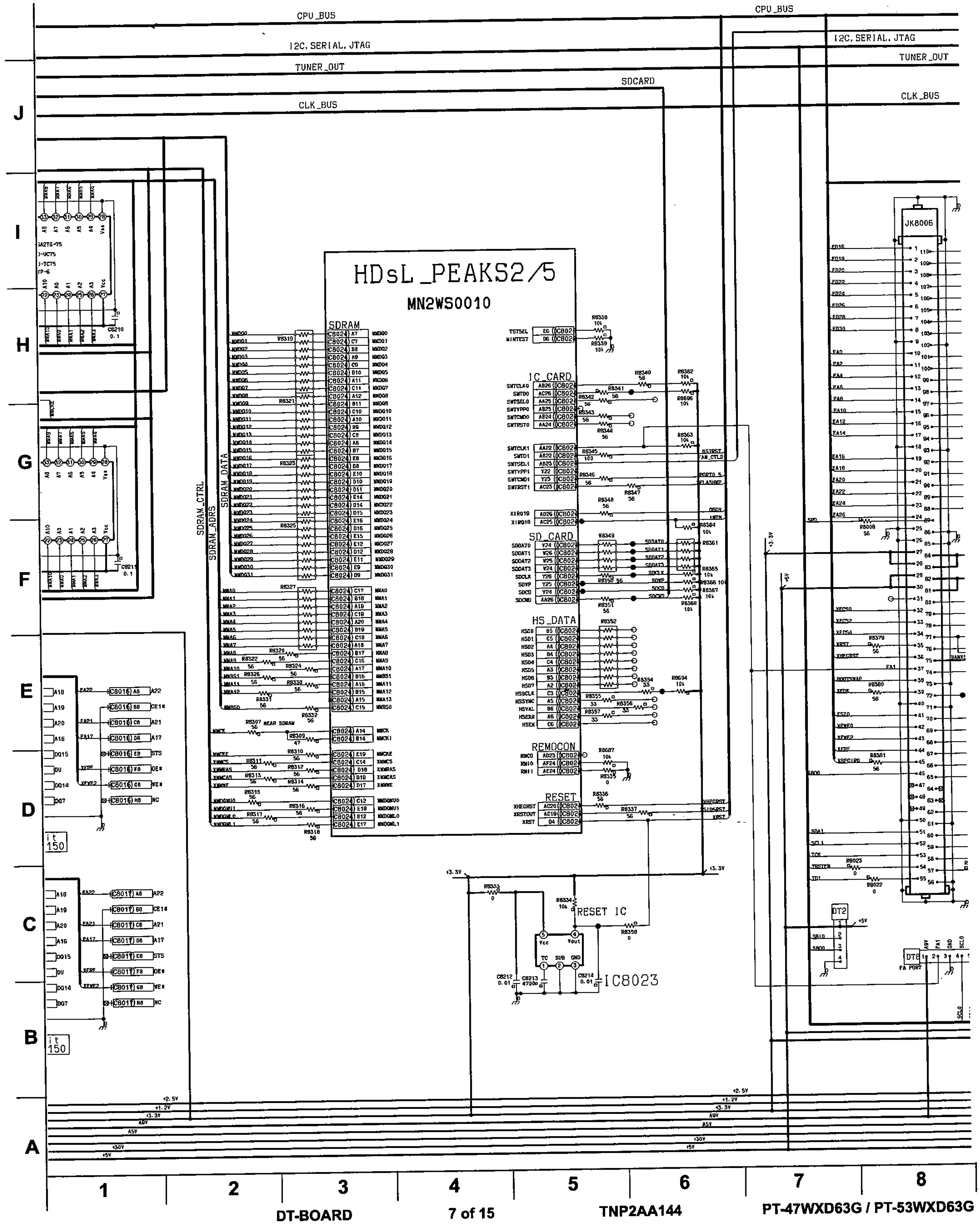
22.26. DT-Board schematic 5 of 15


CPU_BUS
I2C, SERIAL, JTAG
TUNER_OUT
SDCARD
CLK_BUS
CHDATA
SERIAL, JTAG
CPU_BUS
CLK_BUS
HDsL_PEAKS1/5
MN2WS0010
I2C_BUS
PEAKS_I2C
#0 :EEPROM, VDAC
#1 :FrontEND
Interrupt
Channel
CPU_BUS
1394_I/F
SERIAL
JTAG
JK8002
A68B00036
RD_CONNECTOR
IC8011
MB3842
ID 5V
PARTS SIDE
L8096
L8097
YPP
VCC
+3.3V
+5V
+2.5V
+1.2V
+3.3V
A5V
A5V
+30V
+5V
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8

22.27. DT-Board schematic 6 of 15

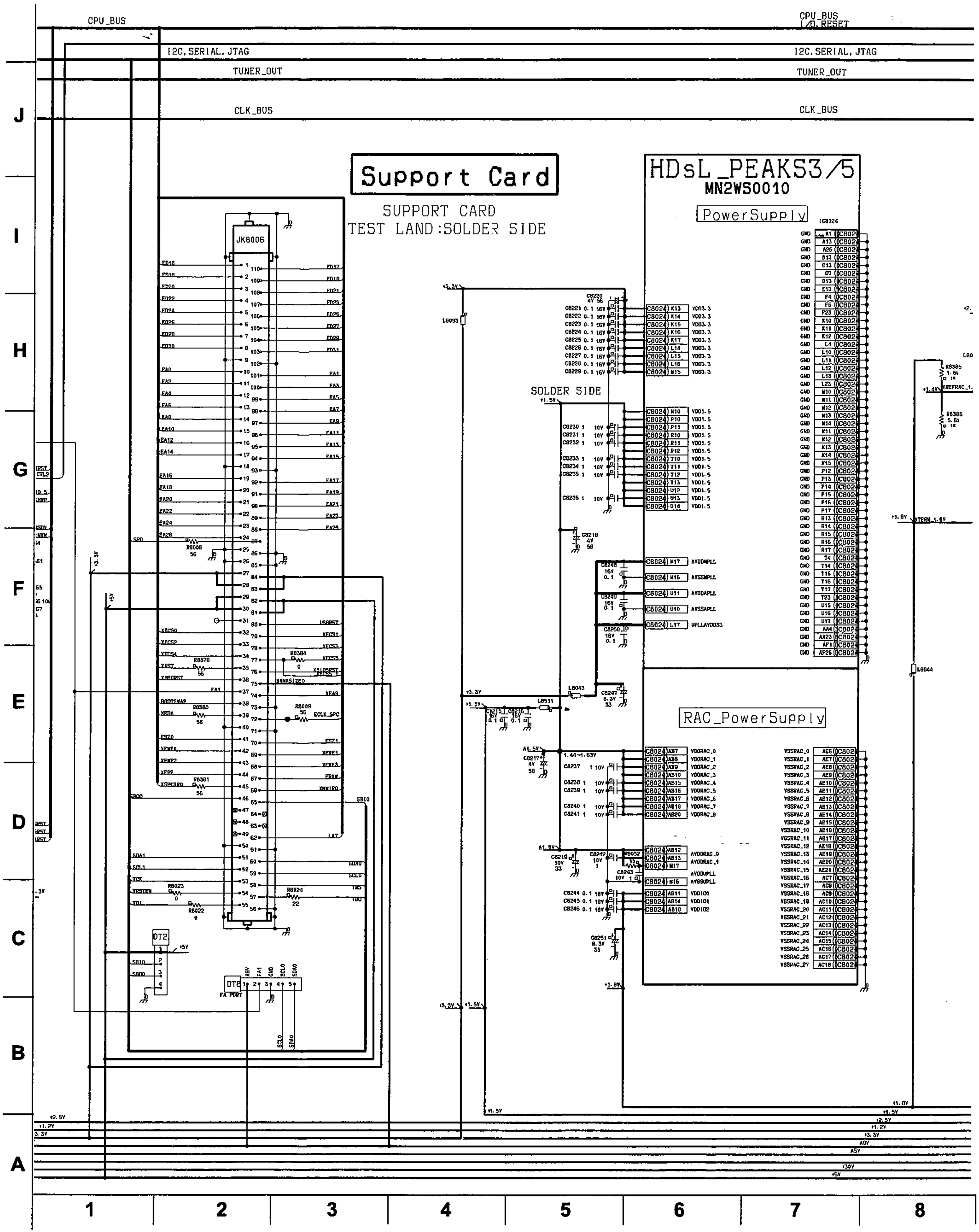

CPU_BUS
I2C, SERIAL, JTAG
TUNER_OUT
SDCARD
CLK_BUS
TOSHIBA
128Mbit
IC8018
TC58FVM7B2ATG65
IC8020
128Mbit
C3ABQG000043
C3ABQG000059
MICRON MT48LC8M16A2TG-75
SAMSUNG K4S281632D-UC75
SAMSUNG K4S281632D-TC75
MITSUBISHI M2V28S40ATP-6
CPU WORK SDRAM 1/2
IC8021
128Mbit
C3ABQG000043
C3ABQG000059
CPU WORK SDRAM 2/2
IC9501
C3FBQG000004
INTEL 128Mbit
PC28F128J3A150
IC9502
C3FBQG000004
INTEL 128Mbit
PC28F128J3A150
+3.3V
+2.5V
+1.2V
A9V
A5V
+30V
+5V
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8

22.28. DT-Board schematic 7 of 15



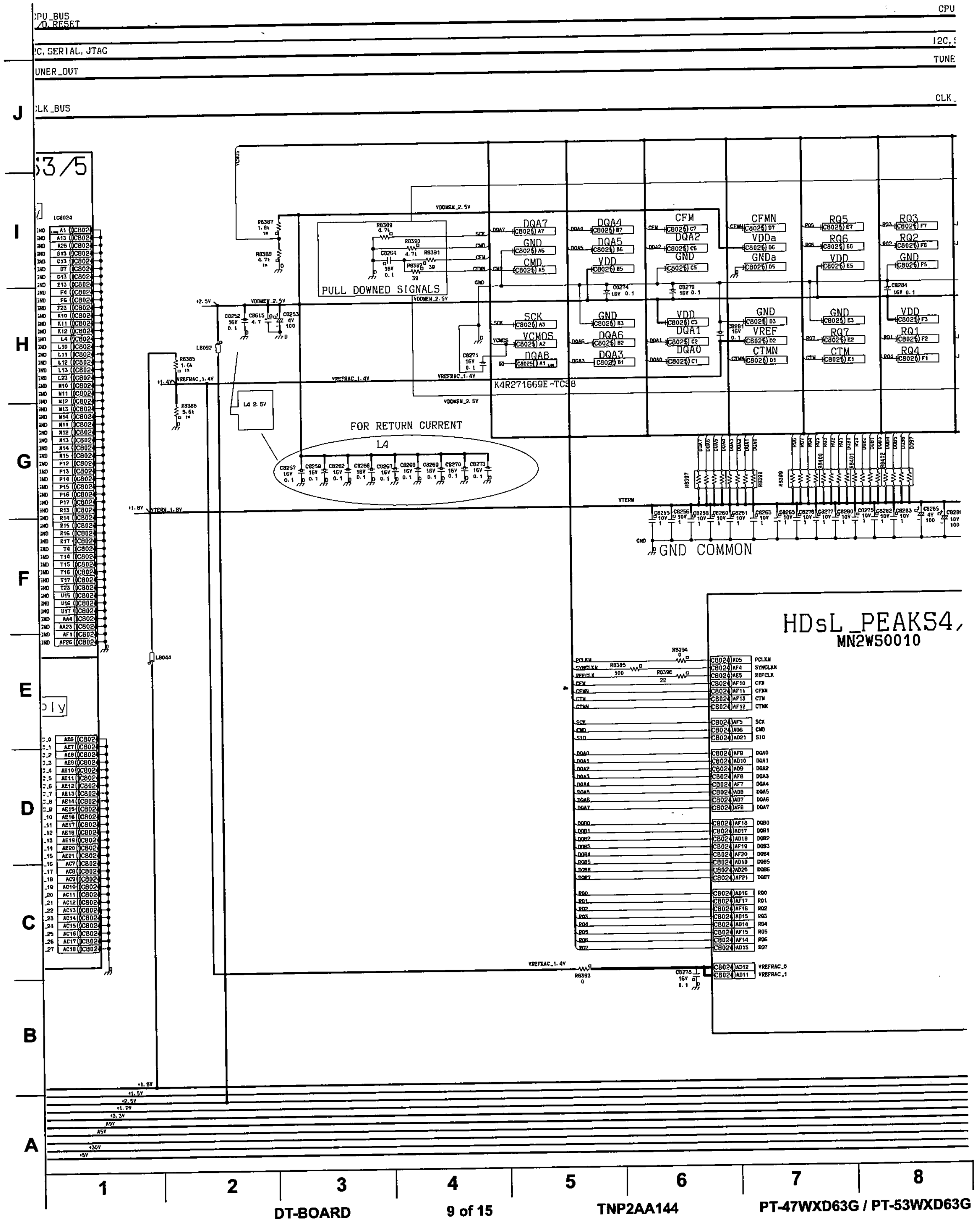
CPU_BUS
I2C, SERIAL, JTAG
TUNER_OUT
SDCARD
CLK_BUS
HDsL_PEAKS2/5
MN2WS0010
SDRAM
SDRAM_DATA
SDRAM_CTRL
SDRAM_ADRS
IC_CARD
SD_CARD
HS_DATA
REMOCON
RESET
RESET IC
IC8023
JK8006
DT2
DT6
FA PORT
+3.3V
+5V
+2.5V
+1.2V
A9V
A5V
+30V
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8

22.29. DT-Board schematic 8 of 15


CPU_BUS
CPU_BUS
I/O_RESET
I2C, SERIAL, JTAG
TUNER_OUT
CLK_BUS
Support Card
SUPPORT CARD
TEST LAND:SOLDER SIDE
JK8006
HDsL_PEAKS3/5
MN2WS0010
PowerSupply
RAC_PowerSupply
SOLDER SIDE
IC8024
DT2
DT8
FA PORT
L8093
L8043
L8511
L8044
R8385
R8386
VREFRAC_1.4V
VTERM_1.8V
+3.3V
+1.5V
+1.8V
+2.5V
+1.2V
A5V
+30V
+5V
A9V
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8

DT-BOARD **8 of 15** **TNP2AA144** **PT-47WXD63G / PT-53WXD63G**

22.30. DT-Board schematic 9 of 15



CPU_BUS
I/O_RESET
I2C, SERIAL, JTAG
TUNER_OUT
CLK_BUS
CPU
I2C,
TUNE
CLK_
IC8024
VDDMEM_2.5V
PULL DOWNED SIGNALS
FOR RETURN CURRENT
L4
L4 2.5V
K4R271669E-TCS8
DQA7
DQA4
CFM
CFMN
RQ5
RQ3
GND
DQA5
DQA2
VDDa
RQ6
RQ2
CMD
VDD
GNDa
SCK
VCMOS
DQA6
DQA1
VREF
RQ7
RQ1
DQA8
DQA3
DQA0
CTMN
CTM
RQ4
VREFRAC_1.4V
YTERM
GND COMMON
HDsL_PEAKS4
MN2W50010
+1.8V
+1.5V
+2.5V
+1.2V
+3.3V
A9V
A5V
+30V
+5V
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8

DT-BOARD

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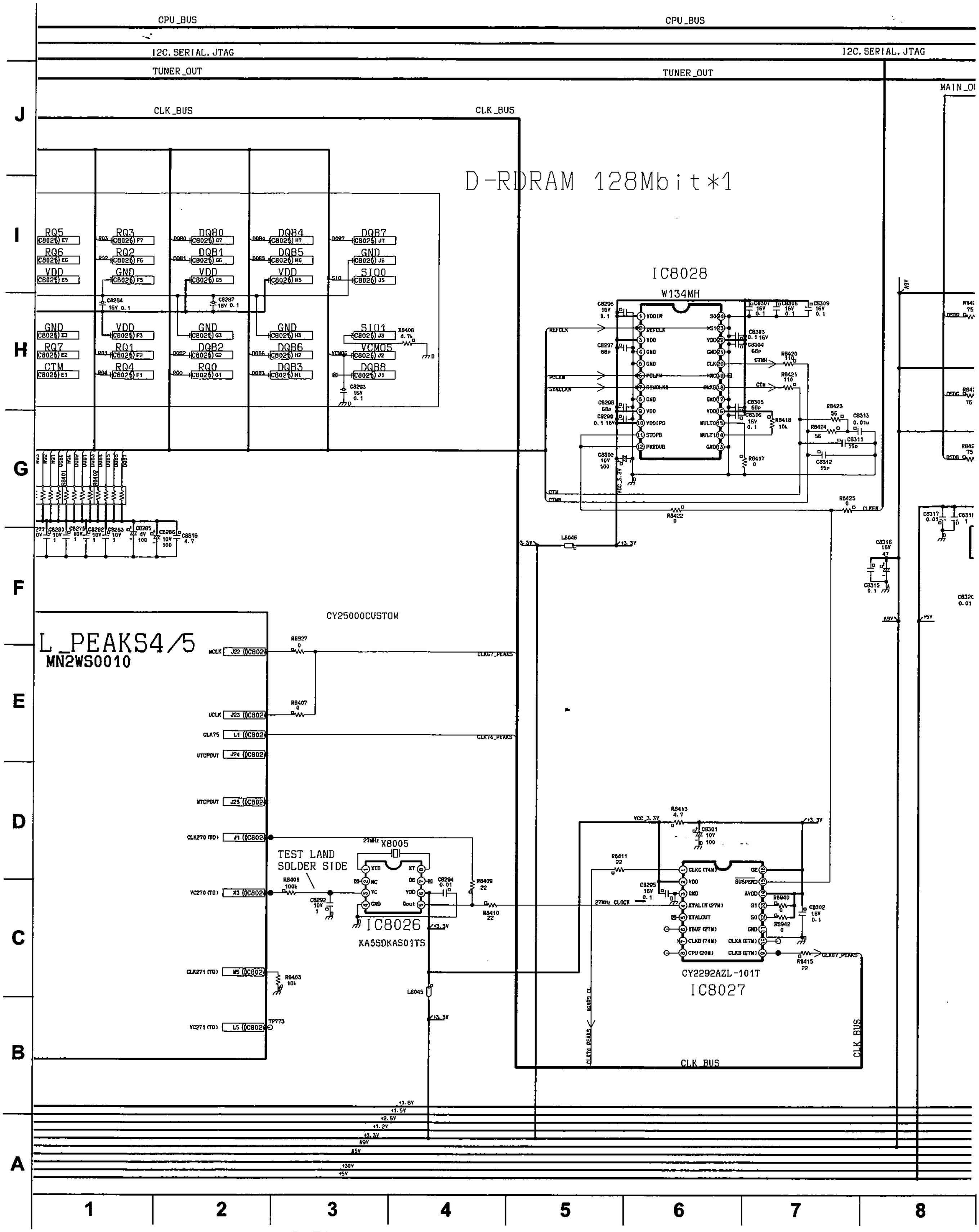
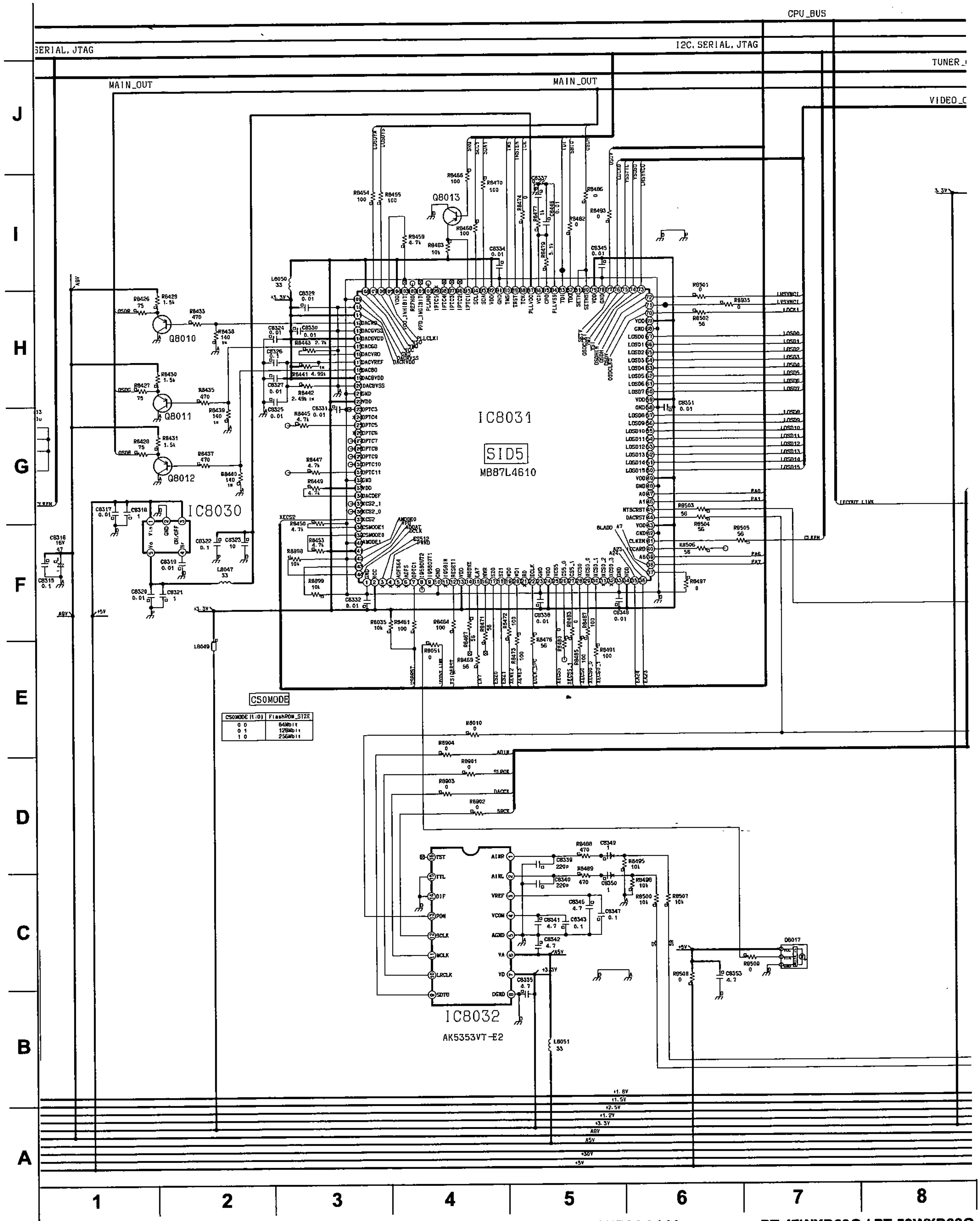
TNP2AA144

PT-47WXD63G / PT-53WXD63G

22.31. DT-Board schematic 10 of 15


CPU_BUS
I2C, SERIAL, JTAG
TUNER_OUT
MAIN_OU
CLK_BUS
D-RDRAM 128Mbit*1
RQ5
RQ6
VDD
GND
RQ7
CTM
RQ3
RQ2
RQ1
RQ4
DQB0
DQB1
DQB2
RQ0
DQB4
DQB5
DQB6
DQB3
DQB7
SIO0
SIO1
VCMOS
DQB8
IC8028
W134MH
VDDIR
REFCLK
VDD
GND
PCLKM
SYNCLKN
VDDIPD
STOPB
PWRDWB
S0
S1
CLK
CLKB
MULT0
MULT1
CTMN
CTM
C8296
C8297
C8298
C8299
C8300
C8303
C8304
C8305
C8306
C8307
C8308
C8309
C8311
C8312
C8313
R8417
R8418
R8420
R8421
R8422
R8423
R8424
R8425
L8046
+3.3V
VCC_3.3V
C8316
C8315
A9V
+5V
L_PEAKS4/5
MN2WS0010
CY25000CUSTOM
MCLK
UCLK
CLK75
VTCPOUT
MTCPOUT
CLK270 (TO)
VC270 (TO)
CLK271 (TO)
VC271 (TO)
J22
J23
L1
J24
J25
J1
X3
M5
L5
IC802
R8927
R8407
R8408
R8403
TP773
CLK67_PEAKS
CLK74_PEAKS
27MHz
X8005
TEST LAND
SOLDER SIDE
XTB
NC
VC
GND
XT
OE
VDD
Oout
C8292
C8294
R8409
R8410
IC8026
KA5SDKAS01TS
L8045
+3.3V
R8413
C8301
R8411
C8295
27MHz CLOCK
CLKC (74M)
VDD
GND
XTALIN (27M)
XTALOUT
XBUF (27M)
CLKD (74M)
CPU (20M)
OE
SUSPEND
AVDD
S1
S0
GND
CLKA (67M)
CLKB (67M)
R8940
R8942
C8302
R8415
CY2292AZL-101T
IC8027
CLK74_PEAKS
CLK_BUS
+1.8V
+1.5V
+2.5V
+1.2V
+3.3V
A9V
A5V
+30V
+5V
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8

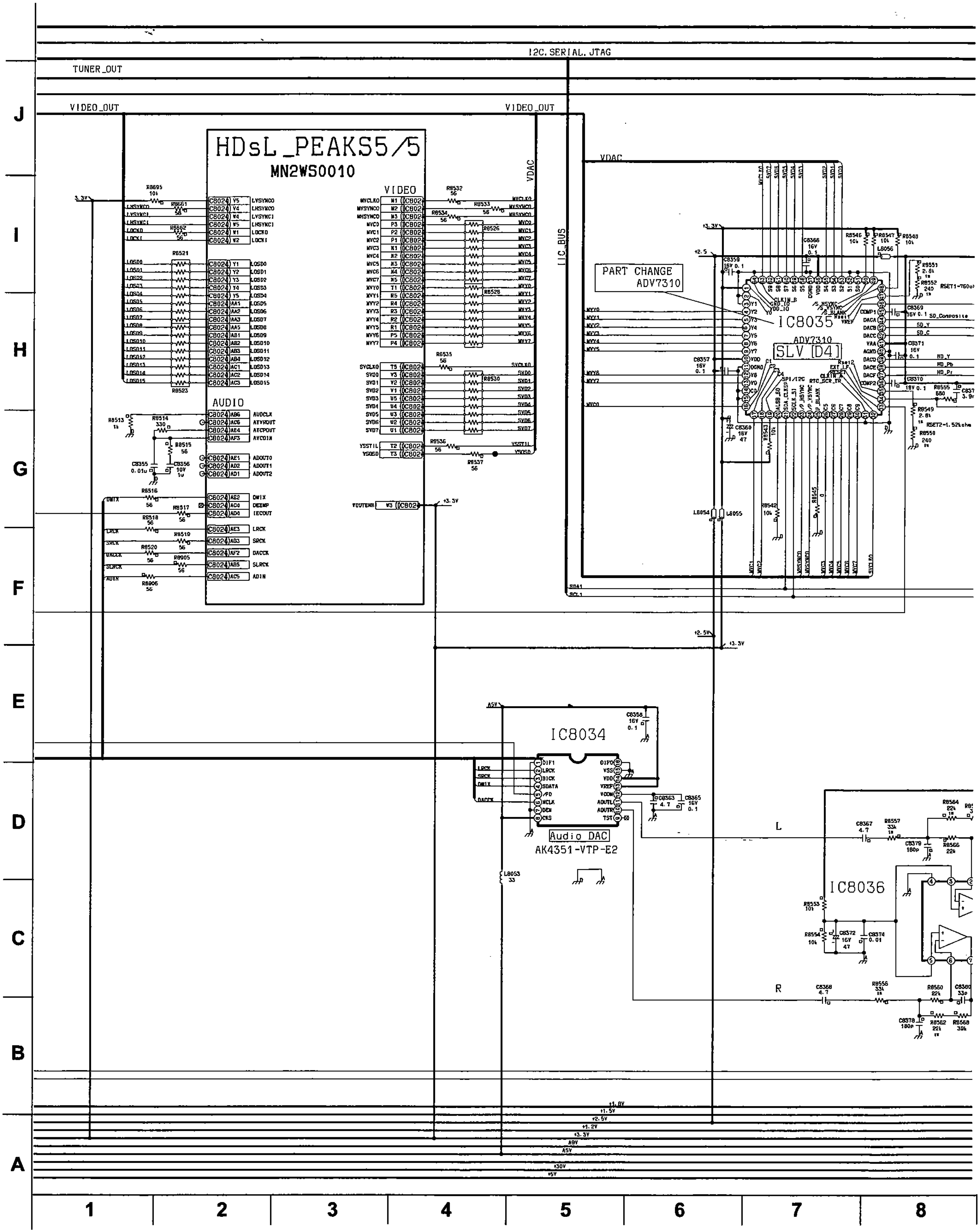
22.32. DT-Board schematic 11 of 15



CPU_BUS
SERIAL, JTAG
I2C, SERIAL, JTAG
TUNER_
MAIN_OUT
MAIN_OUT
VIDEO_C
Q8013
Q8010
Q8011
Q8012
IC8030
IC8031
SID5
MB87L4610
C50MODE
IC8032
AK5353VT-E2
Q8017
L8049
L8051
+1.8V
+1.5V
+2.5V
+1.2V
+3.3V
A9V
A5V
+30V
+5V
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8

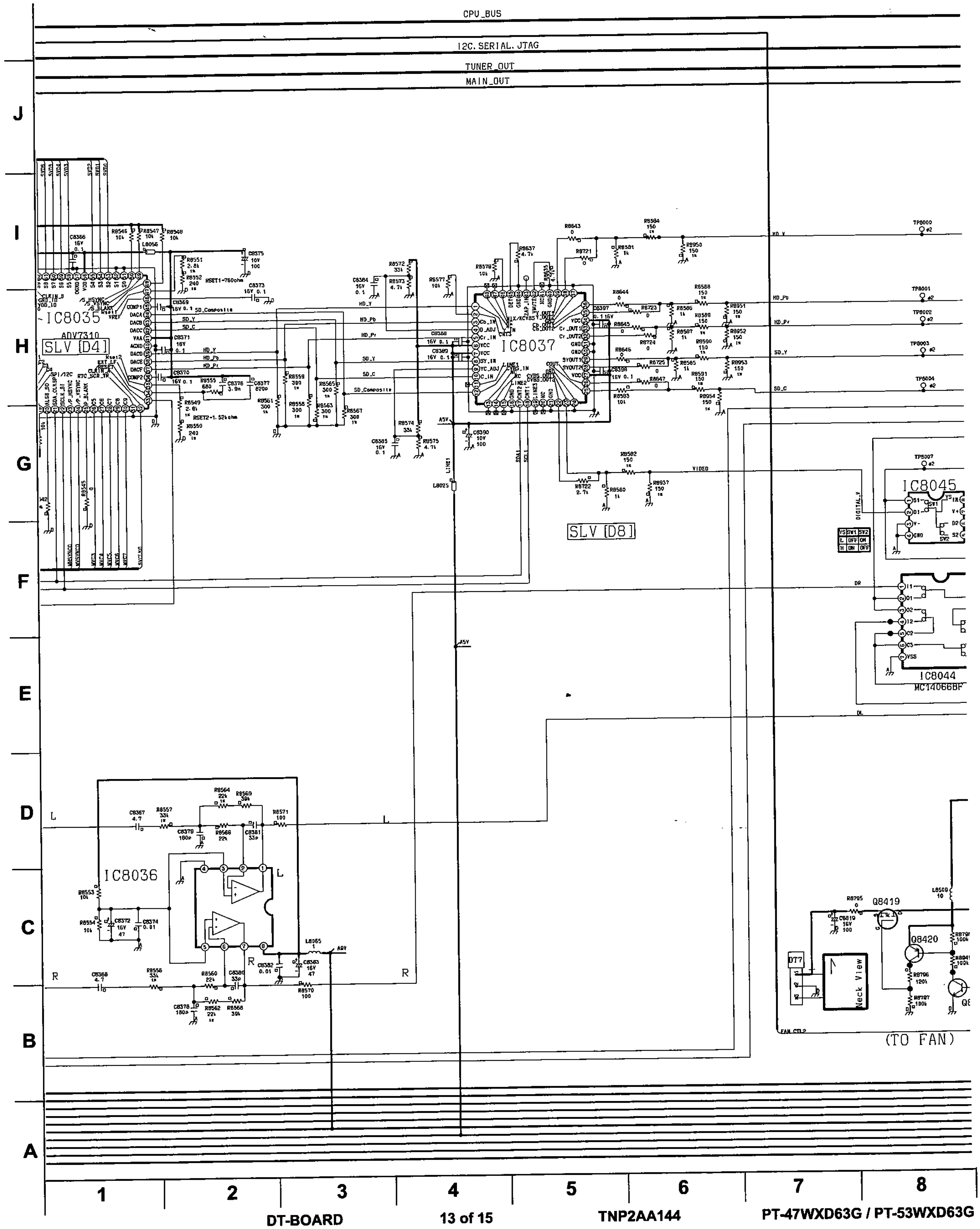
CS0MODE [1:0]	FlashROM_SIZE
0 0	64Mbit
0 1	128Mbit
1 0	256Mbit

22.33. DT-Board schematic 12 of 15

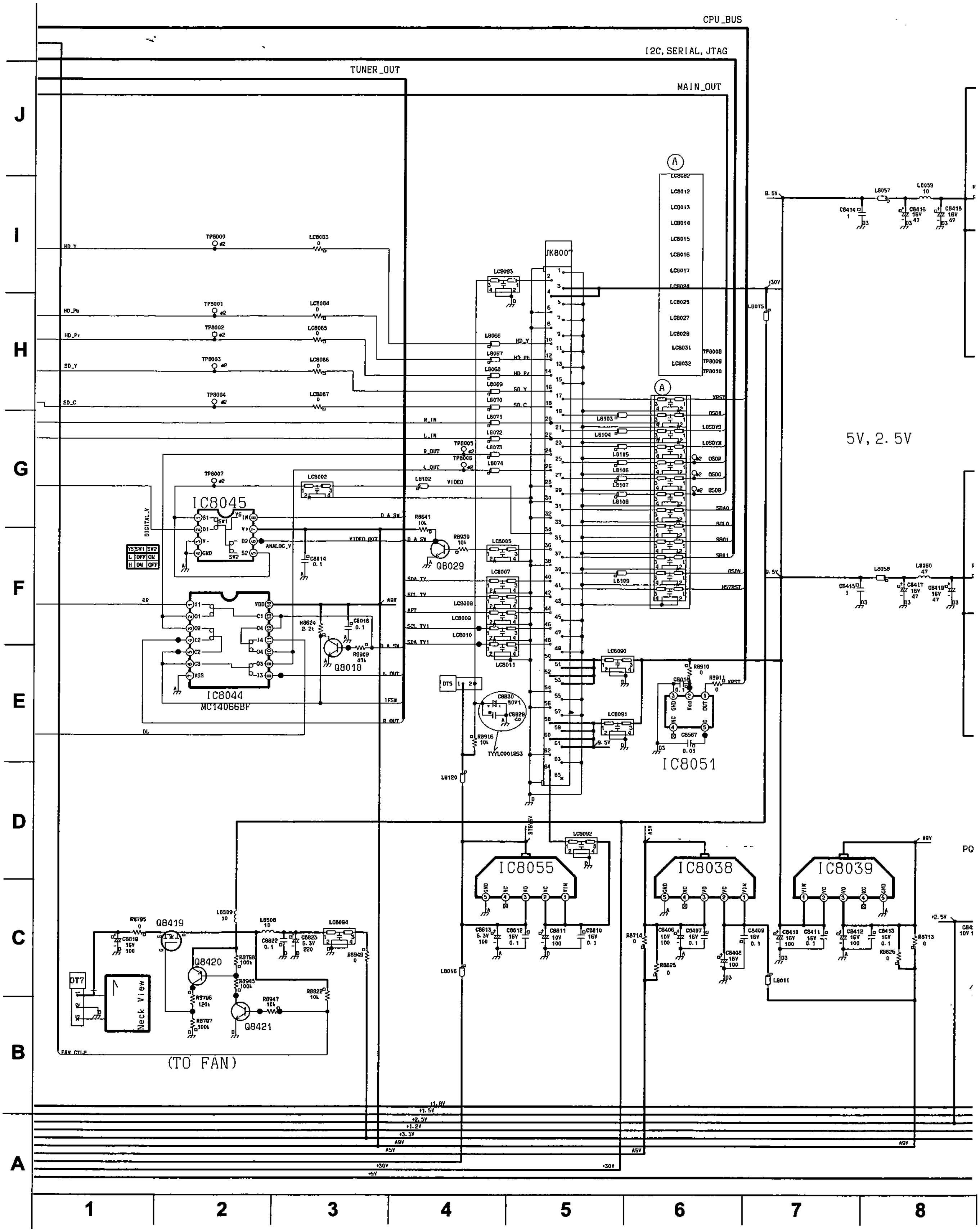


I2C, SERIAL, JTAG
TUNER_OUT
VIDEO_OUT
VIDEO_OUT
HDsL_PEAKS5/5
MN2WS0010
VIDEO
AUDIO
VDAC
VDAC
IIC_BUS
PART CHANGE
ADV7310
IC8035
ADV7310
SLV [D4]
IC8034
Audio DAC
AK4351-VTP-E2
IC8036
L
R
+1.8V
+1.5V
+2.5V
+1.2V
+3.3V
A9V
A5V
+30V
+5V
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8

22.34. DT-Board schematic 13 of 15

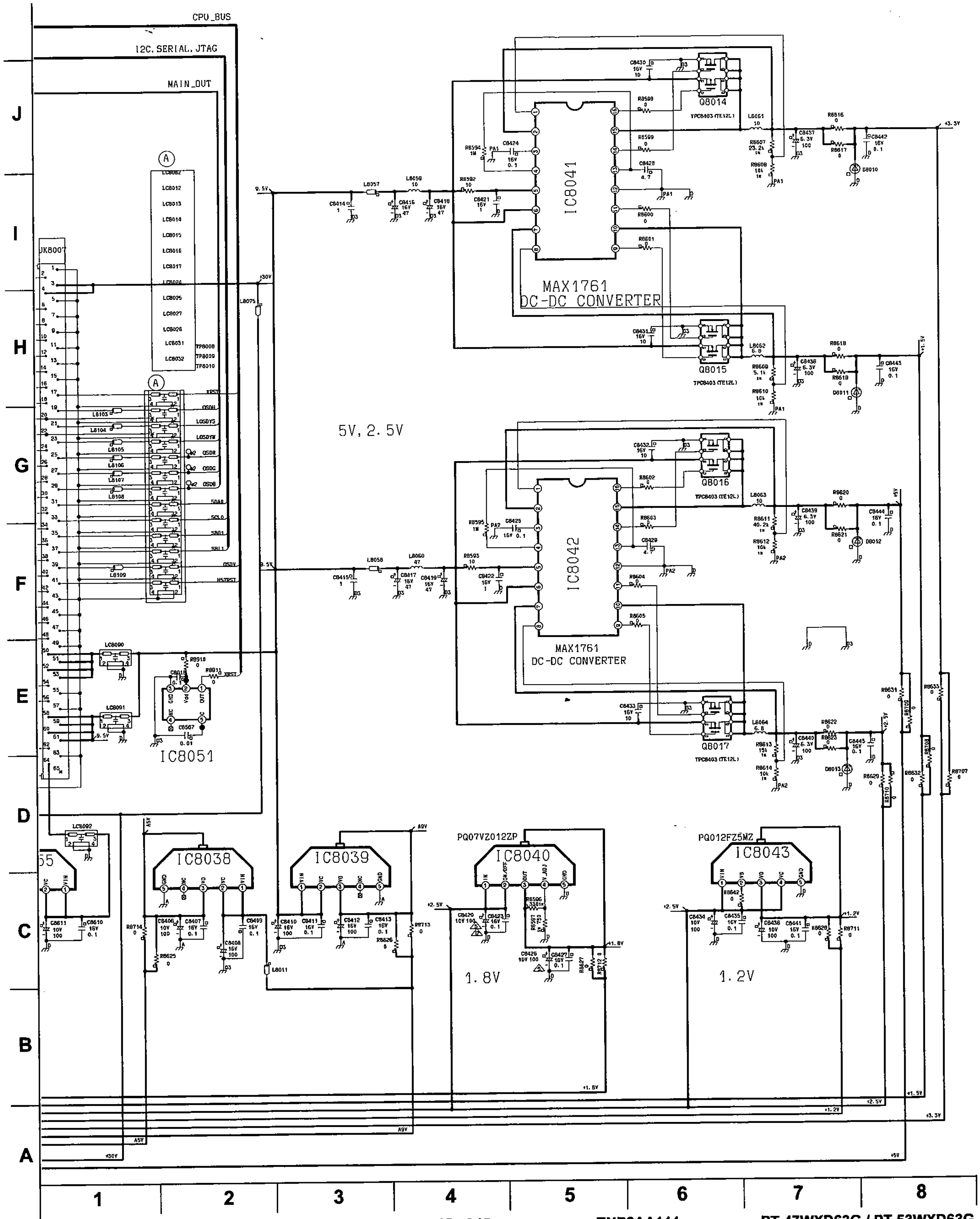

CPU_BUS
I2C.SERIAL.JTAG
TUNER_OUT
MAIN_OUT
IC8035
ADV7310
SLV [D4]
IC8037
SLV [D8]
HD_Y
HD_Pb
HD_Pr
SD_Y
SD_C
SD_Composite
VIDEO
LINE1
A5V
IC8045
IC8044
MC14066BF
DIGITAL_V
DR
DL
IC8036
L
R
A9V
Q8419
Q8420
DT7
Neck View
FAN_CTL2
(TO FAN)
TP8000
TP8001
TP8002
TP8003
TP8004
TP8007
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8

22.35. DT-Board schematic 14 of 15



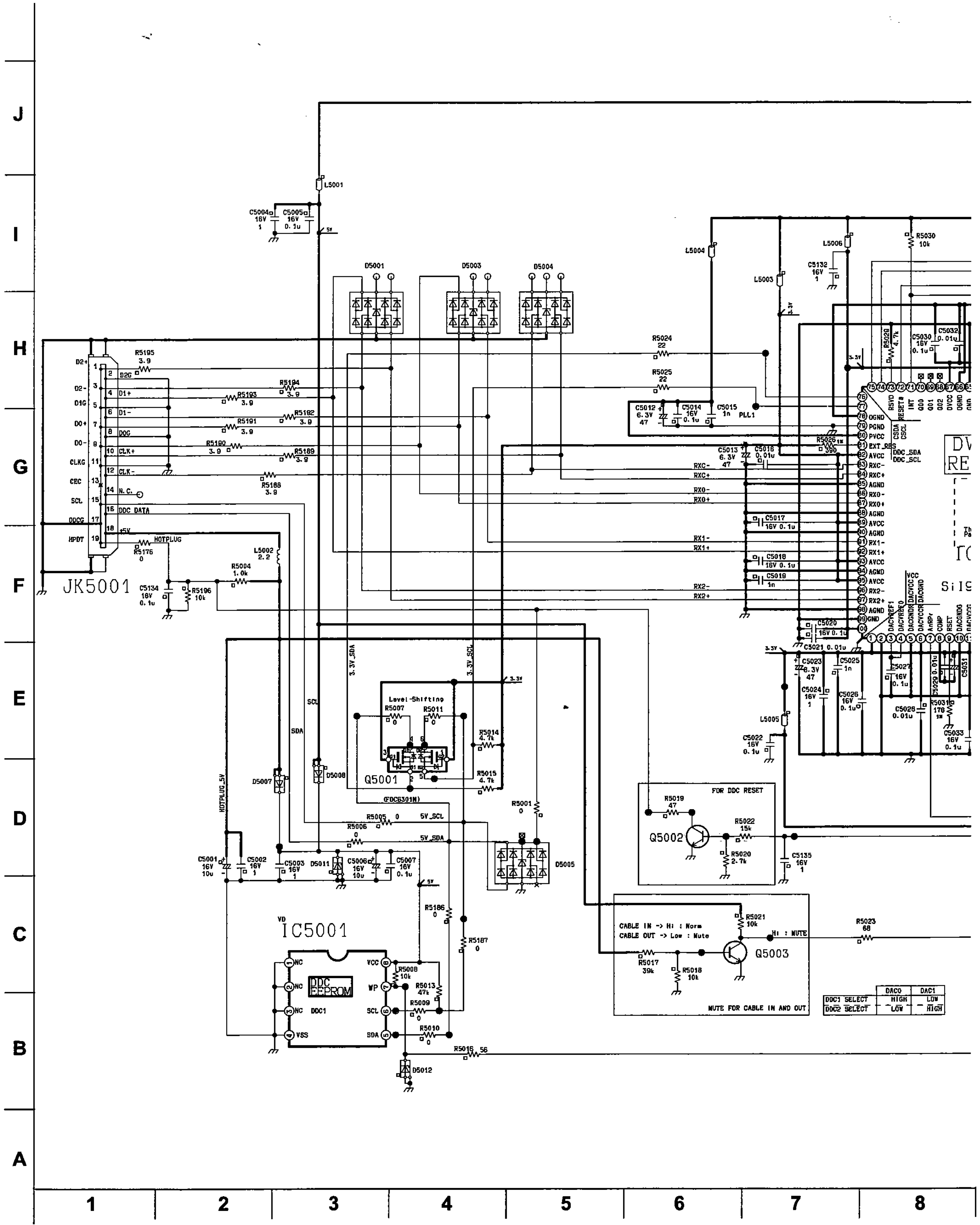
CPU_BUS
I2C, SERIAL, JTAG
TUNER_OUT
MAIN_OUT
J
I
H
G
F
E
D
C
B
A
HD_Y
HD_Pb
HD_Pr
SD_Y
SD_C
TP8000
TP8001
TP8002
TP8003
TP8004
TP8007
LC8083
LC8084
LC8085
LC8086
LC8087
LC8002
JK8007
IC8045
IC8044
MC14066BF
DIGITAL_V
ANALOG_V
CR
DL
Q8029
Q8018
IC8051
5V, 2.5V
IC8055
IC8038
IC8039
Q8419
Q8420
Q8421
DT7
Neck View
(TO FAN)
FAN_CTLP
DT5
L8120
L8016
L8075
L8011
LC8090
LC8091
LC8092
LC8094
A
+1.8V
+1.5V
+2.5V
+1.2V
+3.3V
A9V
A5V
+30V
+5V
PQ
1
2
3
4
5
6
7
8

22.36. DT-Board schematic 15 of 15


CPU_BUS
I2C, SERIAL, JTAG
MAIN_OUT
JK8007
A
IC8041
MAX1761
DC-DC CONVERTER
Q8014
Q8015
TPC8403 (TE12L)
IC8042
MAX1761
DC-DC CONVERTER
Q8016
Q8017
5V, 2.5V
IC8051
IC8038
IC8039
PQ07VZ012ZP
IC8040
PQ012FZ5MZ
IC8043
1.8V
1.2V
9.5V
+30V
A5V
A9V
+3.3V
+1.5V
+2.5V
+1.2V
+1.8V
+5V
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8

DT-BOARD 15 of 15 TNP2AA144 PT-47WXD63G / PT-53WXD63G

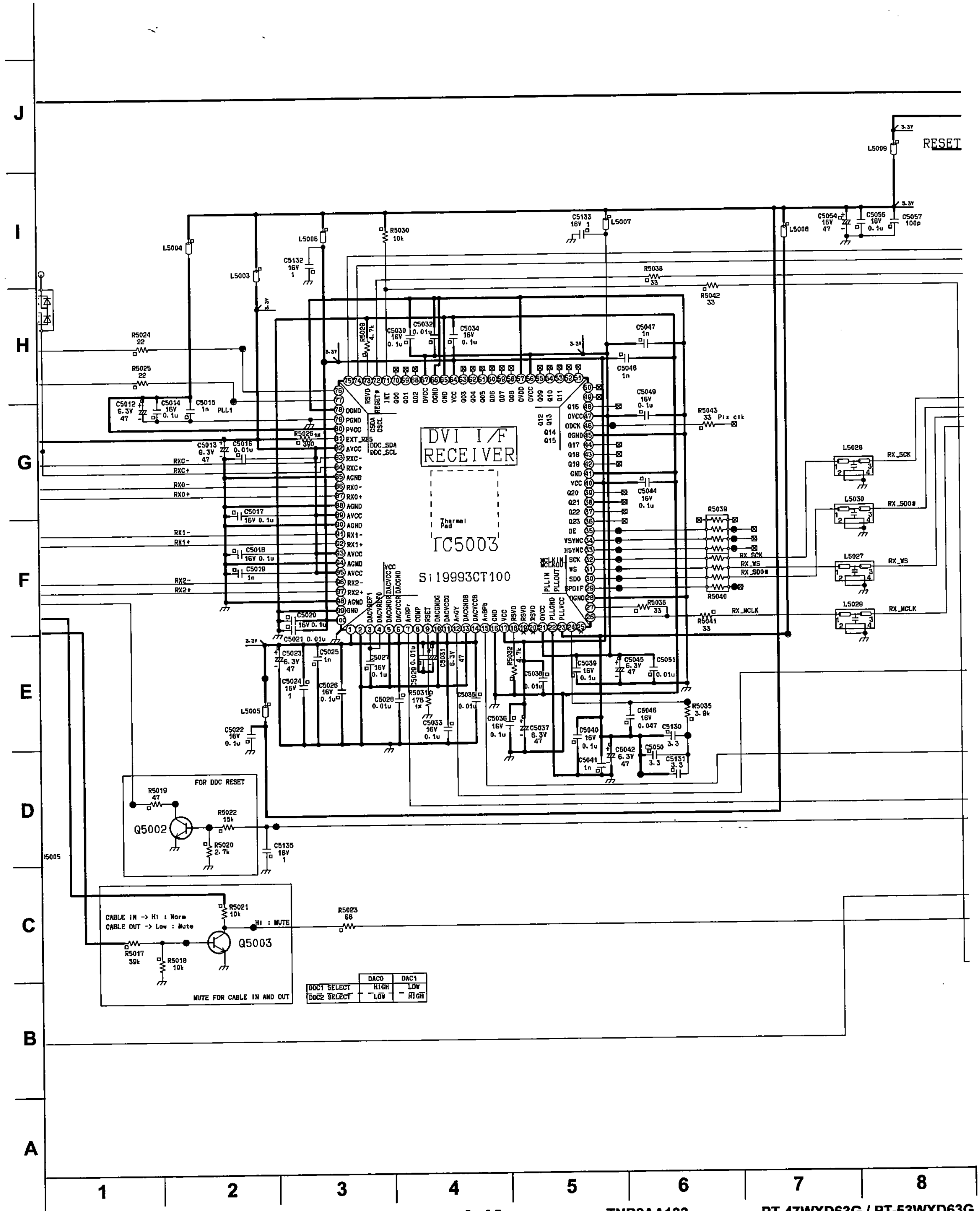
22.37. DV-Board schematic 1 of 5



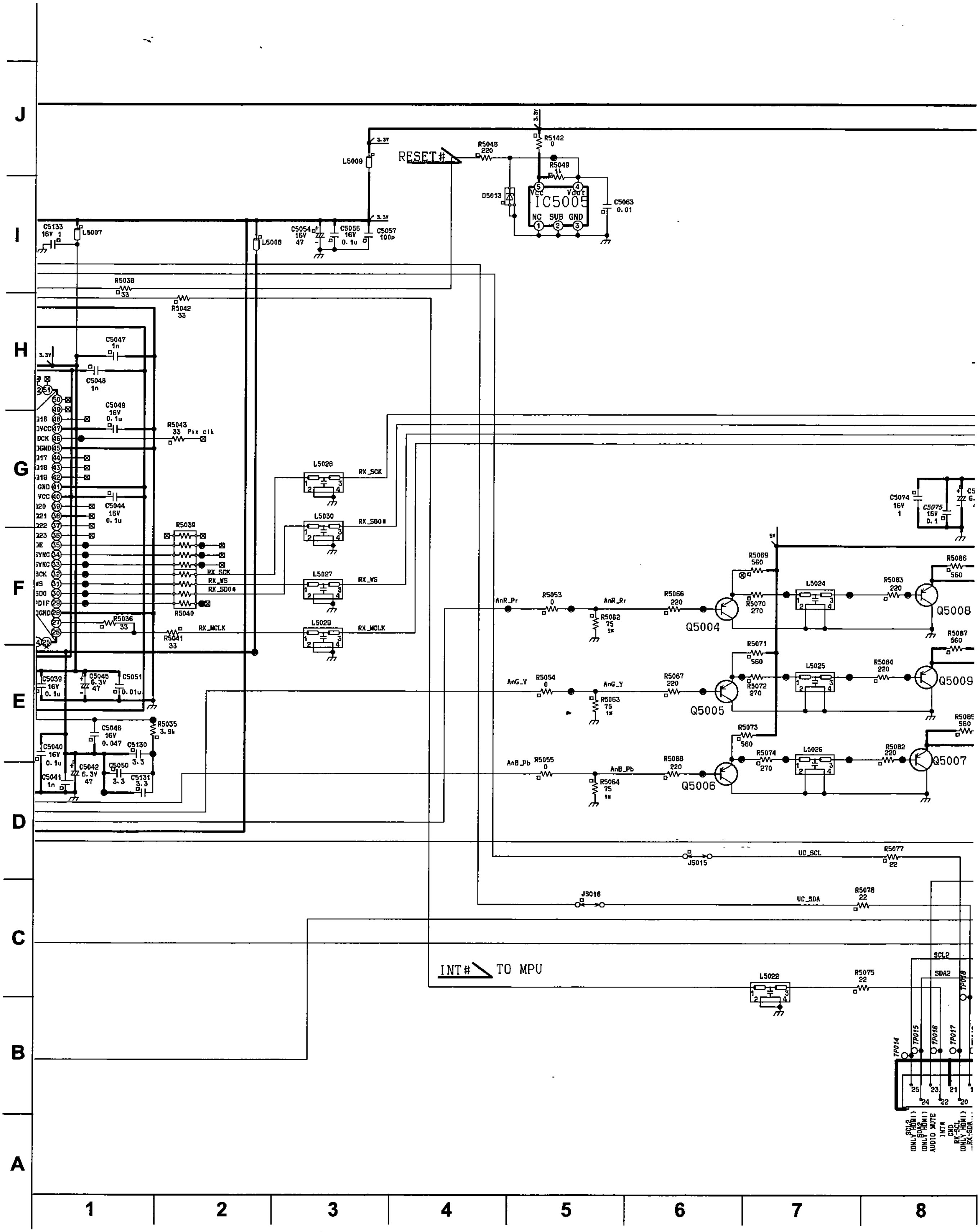
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
L5001
C5004 16V 1
C5005 16V 0.1u
5V
D5001
D5003
D5004
L5004
L5003
L5006
C5132 16V 1
R5030 10k
3.3V
R5024 22
R5025 22
C5012 6.3V 47
C5014 16V 0.1u
C5015 1n
PLL1
R5029 4.7k
C5030 16V 0.1u
C5032 0.01u
JK5001
D2+
D2-
D1G
D0+
D0-
CLKG
CEC
SCL
DDCG
HPDT
D2G
D1+
D1-
D0G
CLK+
CLK-
N.C.
DDC DATA
+5V
HOTPLUG
R5195 3.9
R5194 3.9
R5193 3.9
R5192 3.9
R5191 3.9
R5190 3.9
R5189 3.9
R5188 3.9
R5176 0
L5002 2.2
R5004 1.0k
C5134 16V 0.1u
R5196 10k
C5013 6.3V 47
C5016 0.01u
R5026 1k
390
RXC-
RXC+
RX0-
RX0+
RX1-
RX1+
RX2-
RX2+
C5017 16V 0.1u
C5018 16V 0.1u
C5019 1n
C5020 16V 0.1u
C5021 0.01u
OGND
PGND
PVCC
EXT_RES
AVCC
RXC-
RXC+
AGND
RX0-
RX0+
AGND
AVCC
AGND
RX1-
RX1+
AVCC
AGND
AVCC
RX2-
RX2+
AGND
GND
RSVD
RESET#
INT
QO0
QO1
QO2
OVCC
OGND
CSDA
CSCL
DDC_SDA
DDC_SCL
DACVREF1
DACVREF0
DACVCCR
DACVCC
DACGND
AnRPr
COMP
RSET
DACGNDG
DV
RE
IC
SiI9
3.3V_SDA
3.3V_SCL
3.3V
SCL
SDA
Level-Shifting
R5007 0
R5011 0
R5014 4.7k
R5015 4.7k
Q5001
(FDC6301N)
D5007
D5008
HOTPLUG_5V
R5005 0
5V_SCL
R5006 0
5V_SDA
R5001 0
D5005
C5001 16V 10u
C5002 16V 1
C5003 16V 1
D5011
C5006 16V 10u
C5007 16V 0.1u
5V
C5023 6.3V 47
C5025 1n
C5024 16V 1
C5026 16V 0.1u
C5027 16V 0.1u
C5029 0.01u
C5031
R5031 178 1%
C5028 0.01u
C5033 16V 0.1u
L5005
C5022 16V 0.1u
FOR DDC RESET
R5019 47
Q5002
R5022 15k
R5020 2.7k
C5135 16V 1
VD
IC5001
R5186 0
R5187 0
NC
NC
NC
VSS
VCC
WP
SCL
SDA
DDC EEPROM
DDC1
R5008 10k
R5013 47k
R5009 0
R5010 0
R5016 56
D5012
CABLE IN -> Hi : Norm
CABLE OUT -> Low : Mute
R5021 10k
Hi : MUTE
R5017 39k
R5018 10k
Q5003
MUTE FOR CABLE IN AND OUT
R5023 68

	DAC0	DAC1
DDC1 SELECT	HIGH	LOW
DDC2 SELECT	LOW	HIGH

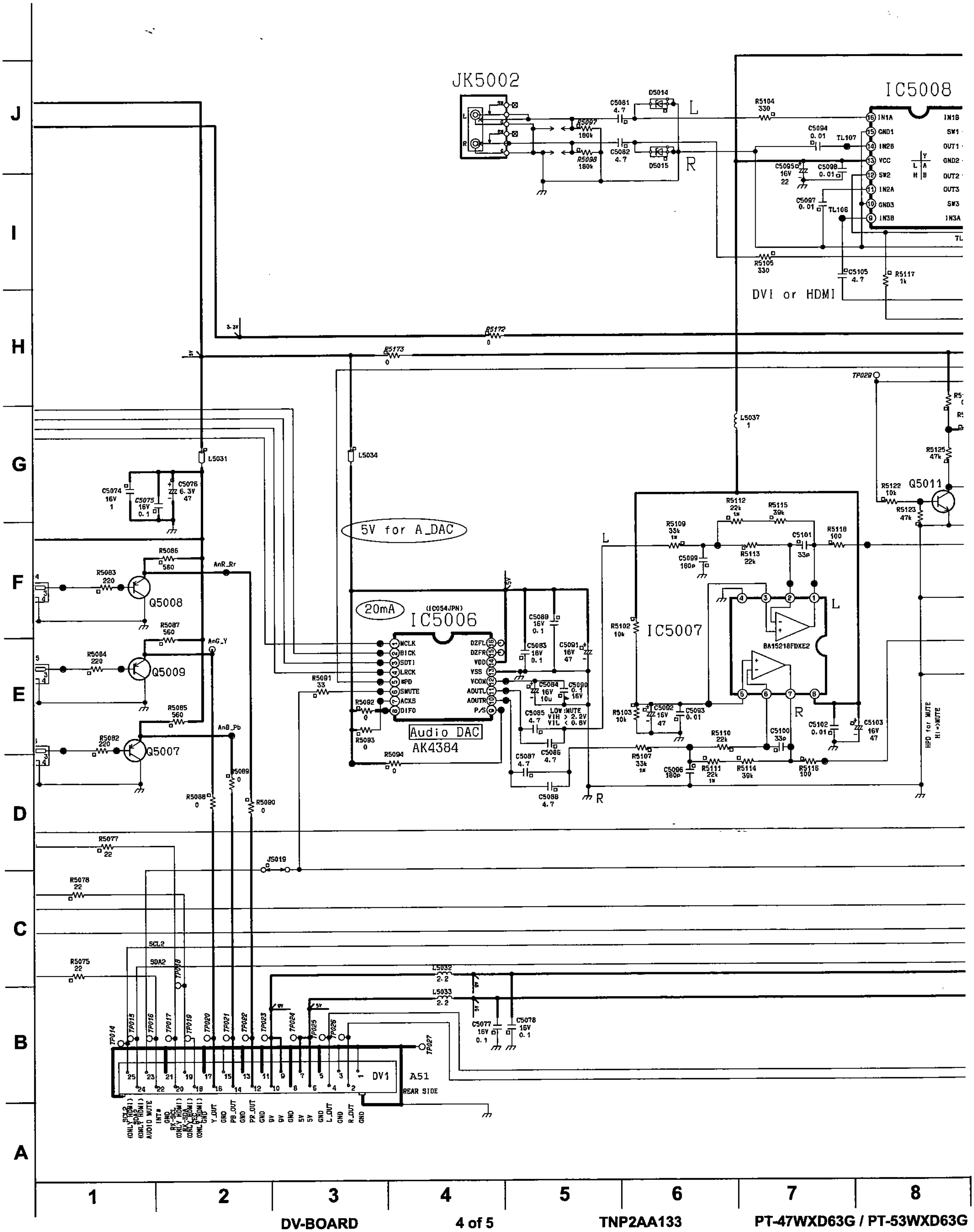
22.38. DV-Board schematic 2 of 5


J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
RESET
L5009
3.3V
L5004
L5005
L5006
L5003
L5007
L5008
R5030
10k
C5133
16V 1
C5132
16V
1
C5054
16V
47
C5056
16V
0.1u
C5057
100p
R5038
33
R5042
33
R5024
22
R5025
22
C5012
6.3V
47
C5014
16V
0.1u
C5015
1n
PLL1
R5029
4.7k
C5030
16V
0.1u
C5032
0.01u
C5034
16V
0.1u
C5047
1n
C5048
1n
C5049
16V
0.1u
R5043
33
Pix clk
C5013
6.3V
47
C5016
0.01u
R5026
390
RXC-
RXC+
RX0-
RX0+
RX1-
RX1+
RX2-
RX2+
C5017
16V 0.1u
C5018
16V 0.1u
C5019
1n
C5020
16V 0.1u
C5021 0.01u
DVI I/F
RECEIVER
Thermal Pad
IC5003
SiI9993CT100
DDC_SDA
DDC_SCL
C5044
16V
0.1u
R5039
R5040
R5036
33
R5041
33
RX_SCK
RX_WS
RX_SD0
RX_MCLK
L5026
L5030
L5027
L5028
C5023
6.3V
47
C5025
1n
C5024
16V
1
C5026
16V
0.1u
C5027
16V
0.1u
C5028
0.01u
C5029 0.01u
R5031
178
1%
C5031
6.3V
47
C5033
16V
0.1u
C5035
0.01u
R5032
4.7k
C5036
16V
0.1u
C5037
6.3V
47
C5038
0.01u
C5039
16V
0.1u
C5045
6.3V
47
C5051
0.01u
C5040
16V
0.1u
C5041
1n
C5042
6.3V
47
C5046
16V
0.047
C5130
3.3
C5050
3.3
C5131
3.3
R5035
3.9k
C5022
16V
0.1u
FOR DDC RESET
R5019
47
Q5002
R5022
15k
R5020
2.7k
C5135
16V
1
R5021
10k
CABLE IN -> Hi : Norm
CABLE OUT -> Low : Mute
Hi : MUTE
R5017
39k
R5018
10k
Q5003
MUTE FOR CABLE IN AND OUT
R5023
68
DAC0
DAC1
DDC1 SELECT
HIGH
LOW
DDC2 SELECT
LOW
HIGH

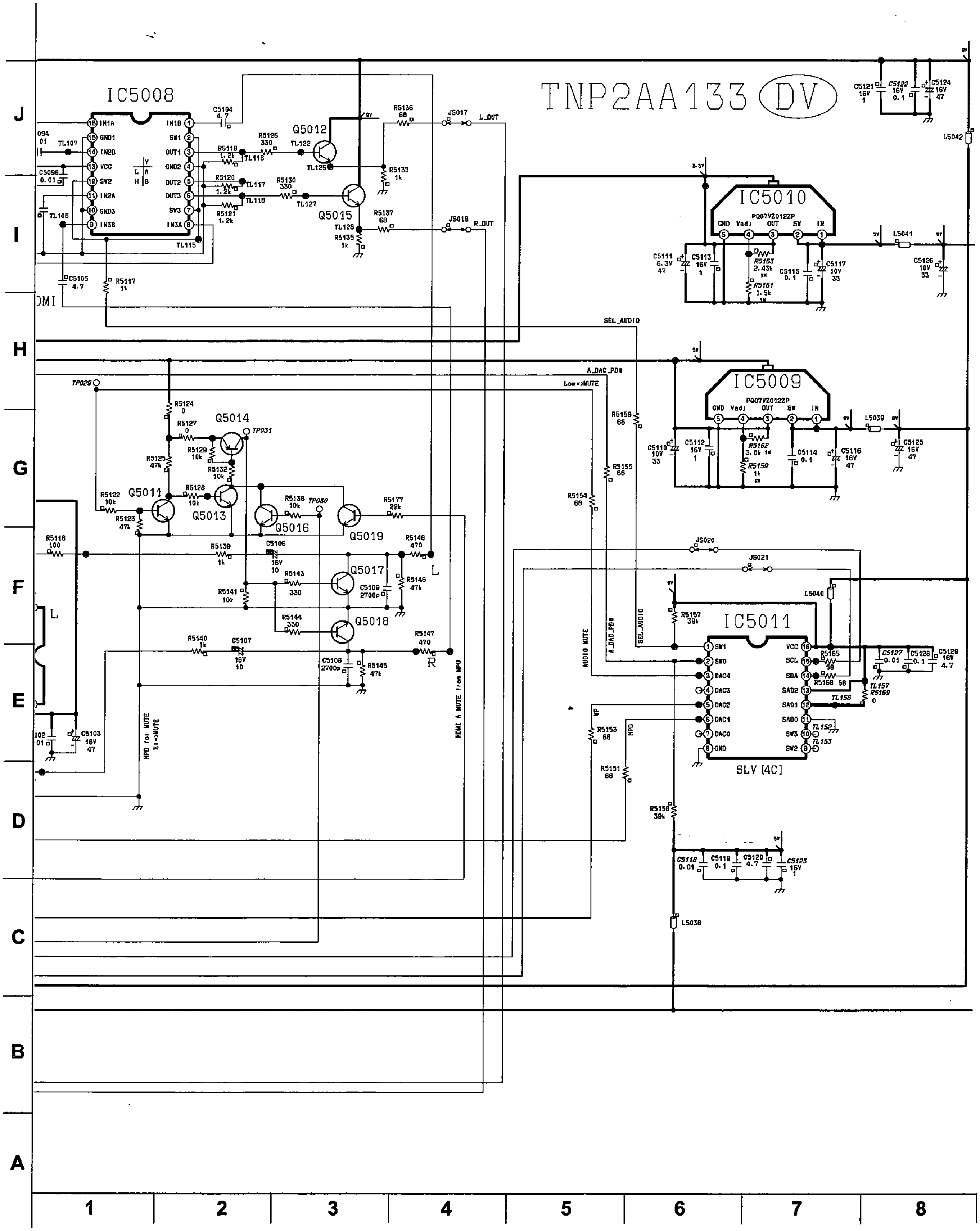
22.39. DV-Board schematic 3 of 5


J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
RESET#
3.3V
L5009
R5048 220
R5142 0
R5049 1k
D5013
IC5005
Vcc Vout
NC SUB GND
C5063 0.01
C5133 16V 1
L5007
L5008
C5054 16V 47
C5056 16V 0.1u
C5057 100p
R5038 33
R5042 33
C5047 1n
C5048 1n
C5049 16V 0.1u
R5043 33 Pix clk
C5044 16V 0.1u
R5039
R5040
RX_SCK
RX_WS
RX_SDO#
RX_MCLK
R5036 33
R5041 33
L5028
L5030
L5027
L5029
C5039 16V 0.1u
C5045 6.3V 47
C5051 0.01u
C5046 16V 0.047
R5035 3.9k
C5130 3.3
C5040 16V 0.1u
C5042 6.3V 47
C5050 3.3
C5131 3.3
C5041 1n
C5074 16V 1
C5075 16V 0.1
5V
R5069 560
R5070 270
R5086 560
R5083 220
L5024
Q5008
AnR_Pr
R5053 0
AnR_Rr
R5062 75 1%
R5066 220
Q5004
R5071 560
R5072 270
R5087 560
R5084 220
L5025
Q5009
AnG_Y
R5054 0
R5063 75 1%
R5067 220
Q5005
R5073 560
R5074 270
R5085 560
R5082 220
L5026
Q5007
AnB_Pb
R5055 0
R5064 75 1%
R5088 220
Q5006
JS015
UC_SCL
R5077 22
JS016
UC_SDA
R5078 22
INT# TO MPU
L5022
R5075 22
SCL2
SDA2
TP014
TP015
TP016
TP017
TP018
25
24
23
22
21
20
SCL2 (ONLY HDMI)
SDA2 (ONLY HDMI)
AUDIO MUTE
INT#
GND
RX-SCL (ONLY HDMI)
RX-SDA

22.40. DV-Board schematic 4 of 5


J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
JK5002
L
R
C5081
4.7
D5014
R5097
180k
R5098
180k
C5082
4.7
D5015
L
R
IC5008
R5104
330
C5094
0.01
TL107
C5095
16V
22
C5098
0.01
C5097
0.01
TL106
16 IN1A
15 GND1
14 IN2B
13 VCC
12 SW2
11 IN2A
10 GND3
9 IN3B
IN1B
SW1
OUT1
GND2
OUT2
OUT3
SW3
IN3A
TL
Y
L A
H B
R5105
330
C5105
4.7
R5117
1k
DVI or HDMI
3.3V
R5172
0
5V
R5173
0
TP029
L5037
1
R5125
47k
R5122
10k
Q5011
R5123
47k
L5031
L5034
C5074
16V
1
C5075
16V
0.1
C5076
6.3V
47
5V for A_DAC
R5086
560
AnR_Rr
R5083
220
Q5008
R5087
560
AnG_Y
R5084
220
Q5009
R5085
560
AnB_Pb
R5082
220
Q5007
R5089
0
R5088
0
R5090
0
20mA
(IC054JPN)
IC5006
1 MCLK
2 BICK
3 SDTI
4 LRCK
5 PD
6 SMUTE
7 ACKS
8 DIFO
16 DZFL
15 DZFR
14 VDD
13 VSS
12 VCOM
11 AOUTL
10 AOUTR
9 P/S
Audio DAC
AK4384
5V
R5091
33
R5092
0
R5093
0
R5094
0
C5089
16V
0.1
C5083
16V
0.1
C5091
16V
47
C5084
16V
10u
C5090
0.1
16V
C5085
4.7
LOW:MUTE
VIH > 2.2V
VIL < 0.8V
C5087
4.7
C5086
4.7
C5088
4.7
L
R
R5109
33k
1%
C5099
180p
R5112
22k
1%
R5115
39k
R5113
22k
C5101
33p
R5118
100
R5102
10k
IC5007
4
3
2
1
L
BA15218FDXE2
5
6
7
8
R
R5103
10k
C5092
16V
47
C5093
0.01
C5102
0.01
C5103
16V
47
R5107
33k
1%
C5096
180p
R5110
22k
C5100
33p
R5111
22k
1%
R5114
39k
R5116
100
HPD for MUTE
HI->MUTE
R5077
22
J5019
R5078
22
SCL2
SDA2
R5075
22
TP018
L5032
2.2
L5033
2.2
9V
5V
C5077
16V
0.1
C5078
16V
0.1
TP014
TP015
TP016
TP017
TP019
TP020
TP021
TP022
TP023
TP024
TP025
TP026
TP027
25
23
21
19
17
15
13
11
9
7
5
3
1
DV1
A51
24
22
20
18
16
14
12
10
8
6
4
2
REAR SIDE
SCL2 (ONLY HDMI)
SDA2 (ONLY HDMI)
AUDIO MUTE
INT
GND
RX-SCL (ONLY HDMI)
RX-SDA (ONLY HDMI)
CEC (ONLY HDMI)
GND
Y_OUT
GND
PB_OUT
GND
PR_OUT
GND
9V
9V
GND
5V
5V
GND
L_OUT
GND
R_OUT
GND

22.41. DV-Board schematic 5 of 5

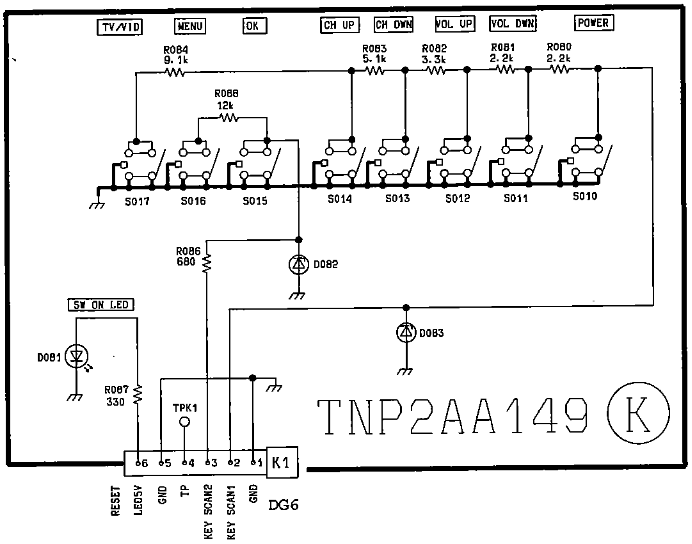

TNP2AA133 (DV)
IC5008
IC5010
PQ07VZ012ZP
IC5009
PQ07VZ0122P
IC5011
SLV [4C]
Q5012
Q5015
Q5014
Q5011
Q5013
Q5016
Q5019
Q5017
Q5018
L_OUT
R_OUT
SEL_AUDIO
A_DAC_PD#
Low=>MUTE
AUDIO MUTE
HPD for MUTE
HDMI A MUTE from MPU
L
R
L5042
L5041
L5039
L5040
L5038
JS017
JS018
JS020
JS021
TP029
TP030
TP031
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8

22.42. G, K, R-Boards schematics

J

I

H

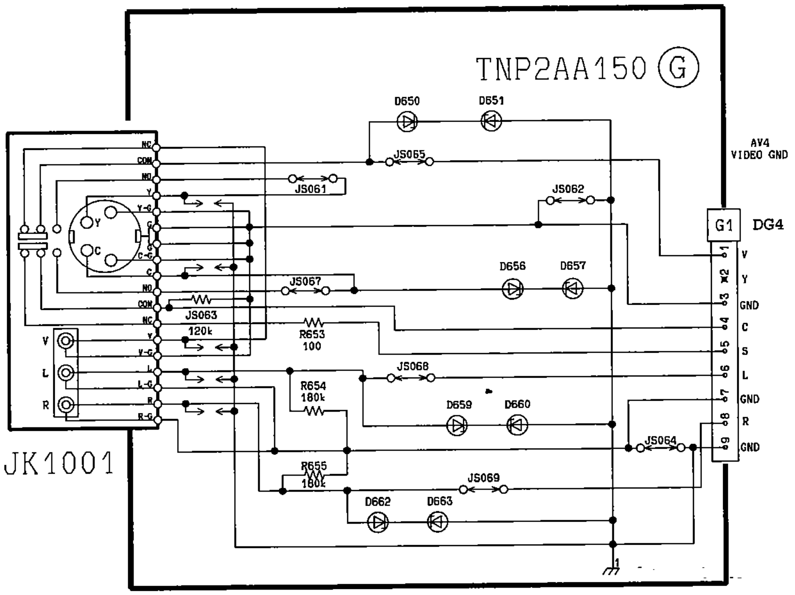

TV/VID
MENU
OK
CH UP
CH DWN
VOL UP
VOL DWN
POWER
R084 9.1k
R083 5.1k
R082 3.3k
R081 2.2k
R080 2.2k
R088 12k
S017
S016
S015
S014
S013
S012
S011
S010
R086 680
D082
SW ON LED
D081
R087 330
TPK1
D083
TNP2AA149 (K)
K1
RESET
LED5V
GND
TP
KEY SCAN2
KEY SCAN1
GND
DG6

G

F

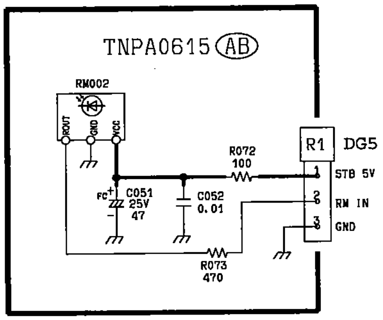
E

D


TNP2AA150 (G)
D650
D651
AV4 VIDEO GND
JS065
JS061
JS062
G1
DG4
V
Y
GND
C
S
L
GND
R
GND
D656
D657
JS067
JS063
120k
R653 100
JS068
R654 180k
D659
D660
JS064
R655 180k
JS069
D662
D663
JK1001
NC
COM
NO
Y
Y-G
C
C-G
V
V-G
L
L-G
R
R-G

C

B

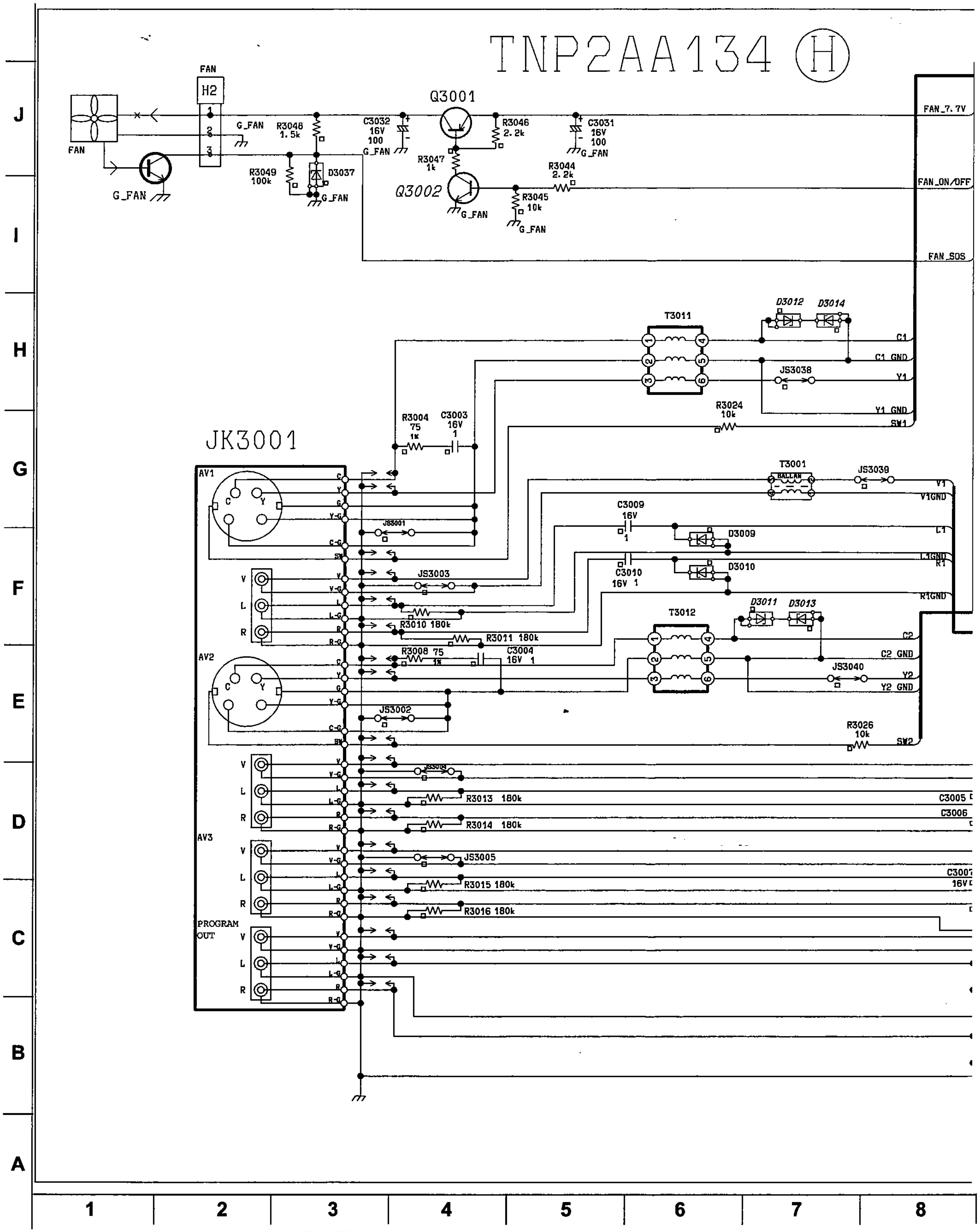

TNPA0615 (AB)
RM002
ROUT
GND
VCC
R072 100
R1
DG5
STB 5V
RM IN
GND
C051 25V 47
C052 0.01
R073 470

A

1	2	3	4	5	6	7	8

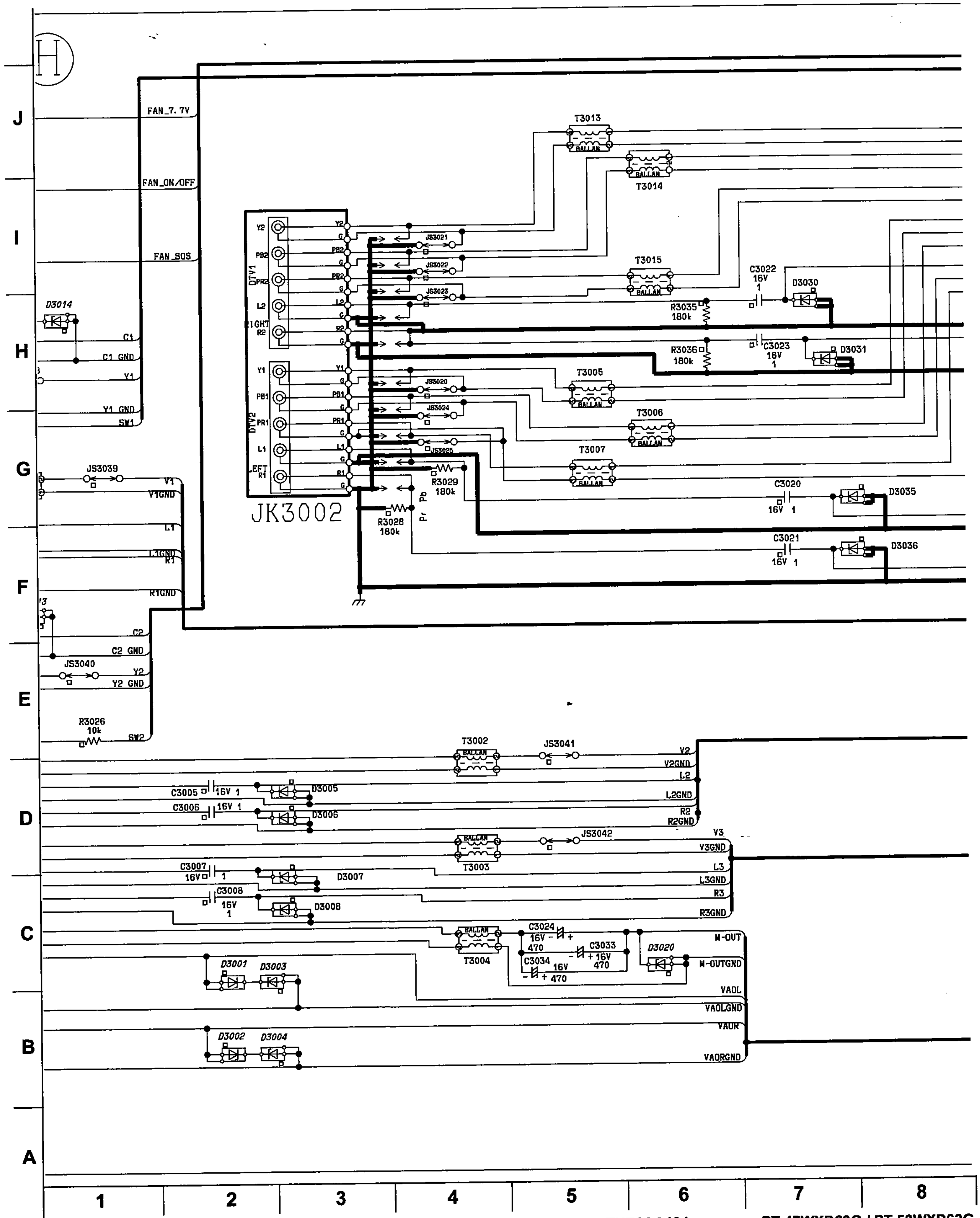
K-BOARD **TNP2AA149 / G-BOARD** **TNP2AA150 / R-BOARD** **TNPA0615AB** **PT-47WXD63G / PT-53WXD63G**

22.43. H-Board schematic 1 of 3


TNP2AA134 (H)
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
FAN
H2
FAN
G_FAN
R3048 1.5k
C3032 16V 100
G_FAN
Q3001
R3046 2.2k
C3031 16V 100
G_FAN
R3047 1k
R3049 100k
D3037
G_FAN
Q3002
G_FAN
R3044 2.2k
R3045 10k
G_FAN
FAN_7.7V
FAN_ON/OFF
FAN_SOS
T3011
D3012
D3014
C1
C1 GND
Y1
JS3038
Y1 GND
R3024 10k
SW1
R3004 75 1%
C3003 16V 1
JK3001
AV1
C
Y
JS3001
T3001
BALLAN
JS3039
V1
V1GND
C3009 16V 1
D3009
L1
L1GND
R1
C3010 16V 1
D3010
R1GND
JS3003
R3010 180k
R3011 180k
T3012
D3011
D3013
C2
C2 GND
R3008 75 1%
C3004 16V 1
AV2
JS3040
Y2
Y2 GND
JS3002
R3026 10k
SW2
JS3004
R3013 180k
C3005
R3014 180k
C3006
AV3
JS5005
R3015 180k
C3007 16V
R3016 180k
PROGRAM OUT
V
L
R
V-G
L-G
R-G
G
Y-G
C-G
SW

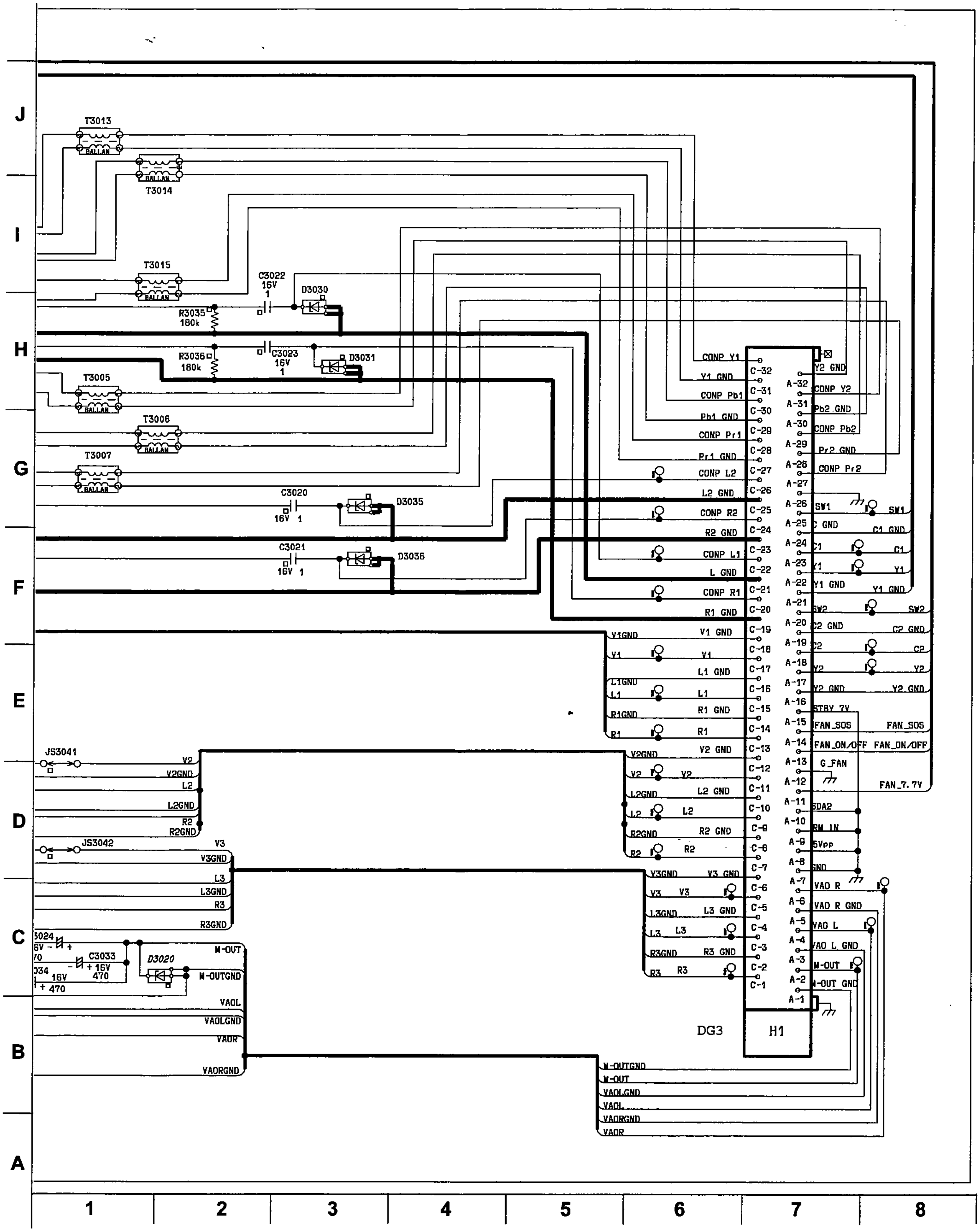
H-BOARD 1 of 3 TNP2AA134 PT-47WXD63G / PT-53WXD63G

22.44. H-Board schematic 2 of 3

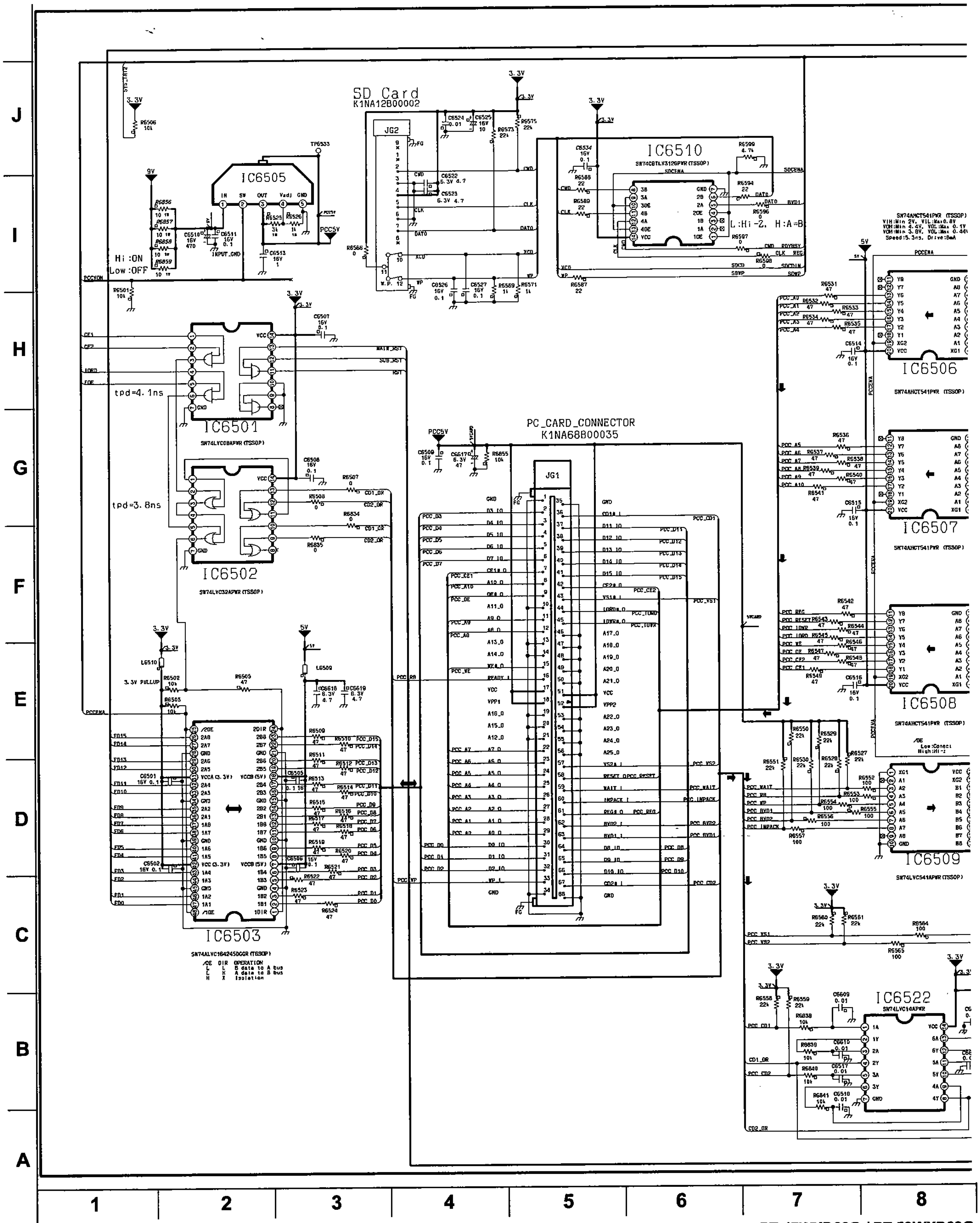

H
J
I
H
G
F
E
D
C
B
A
FAN_7.7V
FAN_ON/OFF
FAN_SOS
D3014
C1
C1 GND
Y1
Y1 GND
SW1
JS3039
V1
V1GND
L1
L1GND
R1
R1GND
C2
C2 GND
JS3040
Y2
Y2 GND
R3026
10k
SW2
T3013
BALLAN
T3014
JK3002
DTV1
DTV2
Y2
PB2
PR2
L2
RIGHT
R2
Y1
PB1
PR1
L1
LEFT
R1
G
JS3021
JS3022
JS3023
JS3020
JS3024
JS3025
T3015
C3022
16V
1
D3030
R3035
180k
R3036
180k
C3023
16V
1
D3031
T3005
T3006
T3007
R3029
180k
R3028
180k
Pr
Pb
C3020
16V 1
D3035
C3021
16V 1
D3036
T3002
JS3041
V2
V2GND
L2
L2GND
R2
R2GND
C3005
16V 1
D3005
C3006
16V 1
D3006
T3003
JS3042
V3
V3GND
C3007
16V
1
D3007
L3
L3GND
R3
R3GND
C3008
16V
1
D3008
T3004
C3024
16V
470
C3033
16V
470
C3034
16V
470
D3020
M-OUT
M-OUTGND
D3001
D3003
VAOL
VAOLGND
VAOR
VAORGND
D3002
D3004
1
2
3
4
5
6
7
8

H-BOARD 2 of 3 TNP2AA134 PT-47WXD63G / PT-53WXD63G

22.45. H-Board schematic 3 of 3


J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
T3013
BALLAN
T3014
T3015
T3005
T3006
T3007
C3022
16V
1
D3030
R3035
180k
R3036
180k
C3023
16V
1
D3031
C3020
16V 1
D3035
C3021
16V 1
D3036
JS3041
JS3042
V2
V2GND
L2
L2GND
R2
R2GND
V3
V3GND
L3
L3GND
R3
R3GND
C3033
16V
470
D3020
M-OUT
M-OUTGND
VAOL
VAOLGND
VAOR
VAORGND
CONP Y1
Y1 GND
CONP Pb1
Pb1 GND
CONP Pr1
Pr1 GND
CONP L2
L2 GND
CONP R2
R2 GND
CONP L1
L GND
CONP R1
R1 GND
V1 GND
V1
L1 GND
L1
R1 GND
R1
V2 GND
V2
L2 GND
L2
R2 GND
R2
V3 GND
V3
L3 GND
L3
R3 GND
R3
C-32
C-31
C-30
C-29
C-28
C-27
C-26
C-25
C-24
C-23
C-22
C-21
C-20
C-19
C-18
C-17
C-16
C-15
C-14
C-13
C-12
C-11
C-10
C-9
C-8
C-7
C-6
C-5
C-4
C-3
C-2
C-1
A-32
A-31
A-30
A-29
A-28
A-27
A-26
A-25
A-24
A-23
A-22
A-21
A-20
A-19
A-18
A-17
A-16
A-15
A-14
A-13
A-12
A-11
A-10
A-9
A-8
A-7
A-6
A-5
A-4
A-3
A-2
A-1
Y2 GND
CONP Y2
Pb2 GND
CONP Pb2
Pr2 GND
CONP Pr2
SW1
C GND
C1
Y1
Y1 GND
SW2
C2 GND
C2
Y2
Y2 GND
STBY 7V
FAN_SOS
FAN_ON/OFF
G_FAN
SDA2
RM IN
5Vpp
GND
VAO R
VAO R GND
VAO L
VAO L GND
M-OUT
M-OUT GND
C1 GND
FAN_7.7V
DG3
H1
V1GND
L1GND
R1GND
V2GND
L2GND
R2GND
V3GND
L3GND
R3GND
M-OUTGND
VAOLGND
VAORGND

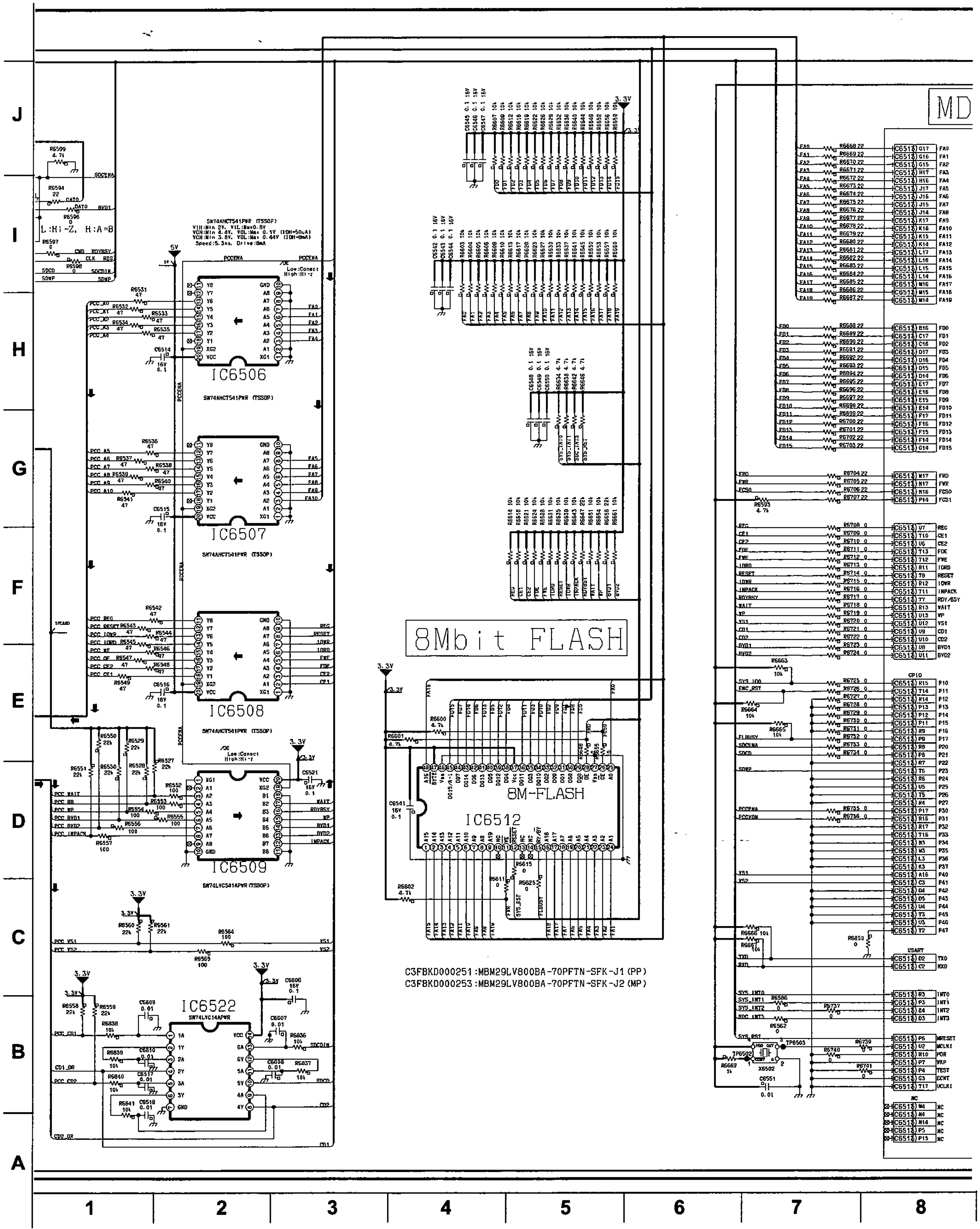
22.46. JG-Board schematic 1 of 4



J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
SD Card
K1NA12B00002
JG2
IC6505
IC6510
SN74CBTLV3126PWR (TSSOP)
L:Hi-Z, H:A=B
IC6501
SN74LVC08APWR (TSSOP)
tpd=4.1ns
IC6502
SN74LVC32APWR (TSSOP)
tpd=3.8ns
IC6503
SN74ALVC164245DGGR (TSSOP)
/OE DIR OPERATION
L L B data to A bus
L H A data to B bus
H X Isolation
PC_CARD_CONNECTOR
K1NA68B00035
JG1
IC6506
SN74AHCT541PWR (TSSOP)
IC6507
SN74AHCT541PWR (TSSOP)
IC6508
SN74AHCT541PWR (TSSOP)
IC6509
SN74LVC541APWR (TSSOP)
IC6522
SN74LVC14APWR
Hi:ON
Low:OFF
3.3V PULLUP
3.3V
5V
9V
PCC5V
TP6533

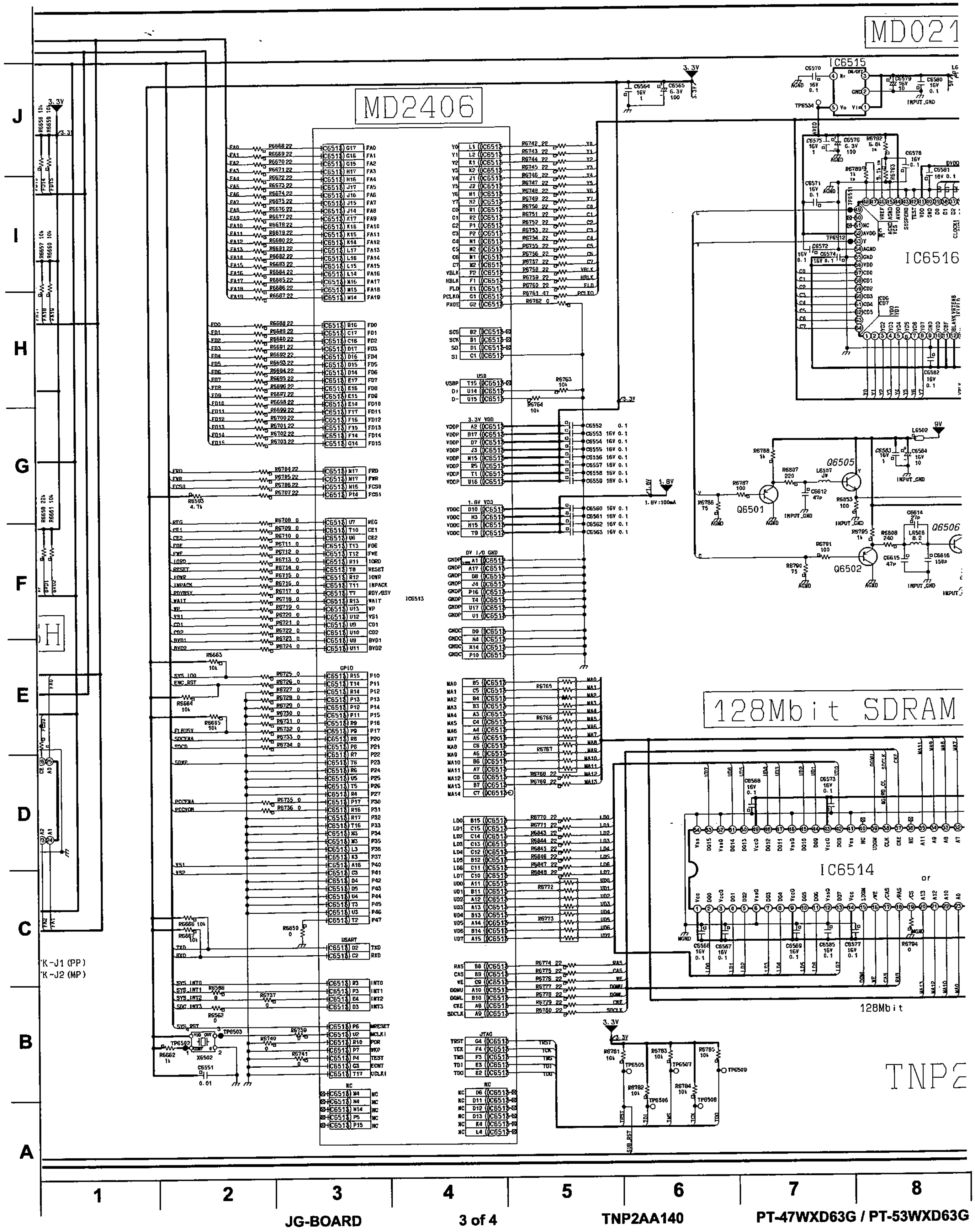
JG-BOARD 1 of 4 TNP2AA140 PT-47WXD63G / PT-53WXD63G

22.47. JG-Board schematic 2 of 4

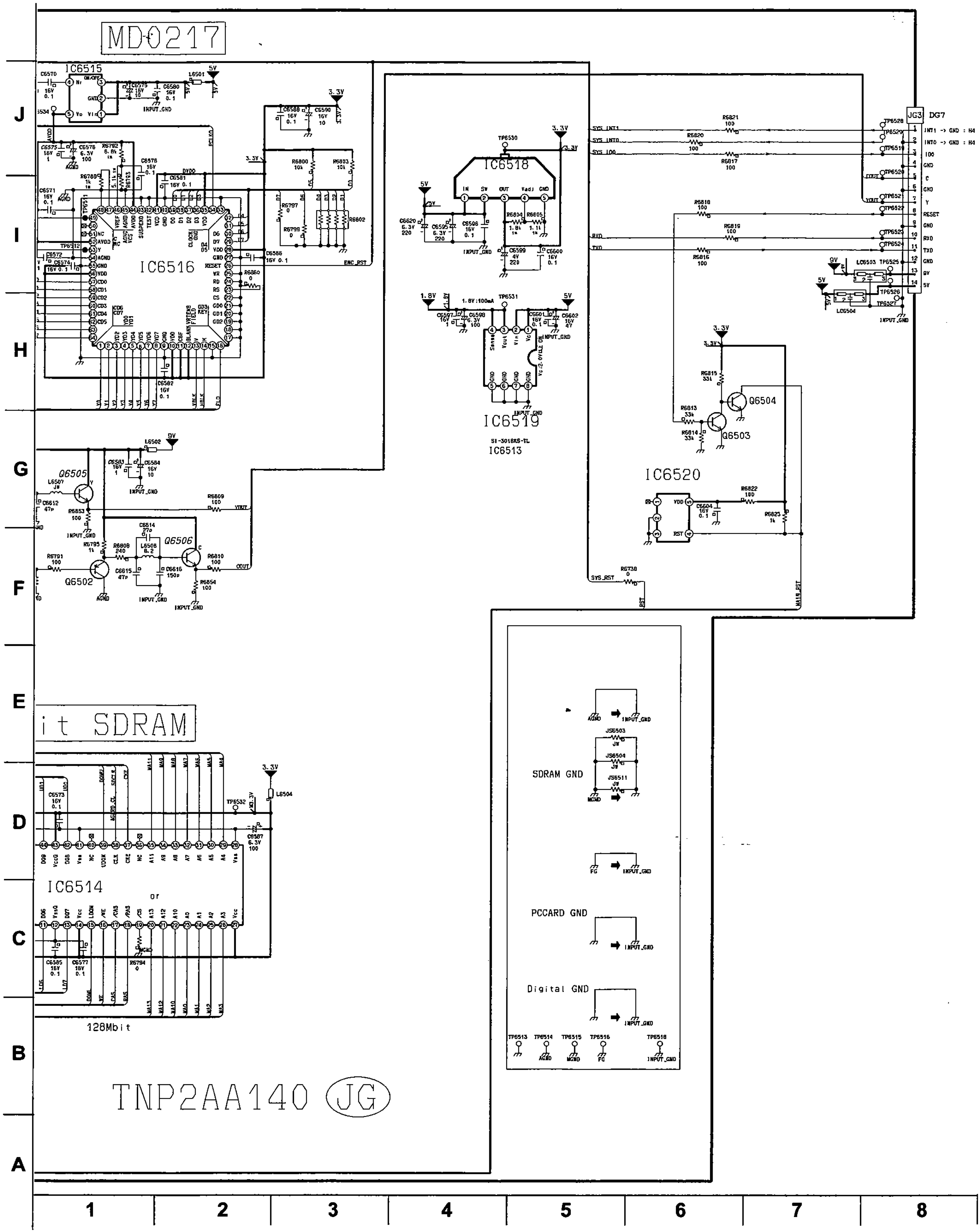


J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
MD
L:Hi-Z, H:A=B
IC6506
SN74AHCT541PWR (TSSOP)
IC6507
SN74AHCT541PWR (TSSOP)
IC6508
SN74AHCT541PWR (TSSOP)
IC6509
SN74LVC541APWR (TSSOP)
IC6522
SN74LVC14APWR
8Mbit FLASH
8M-FLASH
IC6512
C3FBKD000251:MBM29LV800BA-70PFTN-SFK-J1 (PP)
C3FBKD000253:MBM29LV800BA-70PFTN-SFK-J2 (MP)
GPIO
USART
3.3V
5V
X6502

22.48. JG-Board schematic 3 of 4

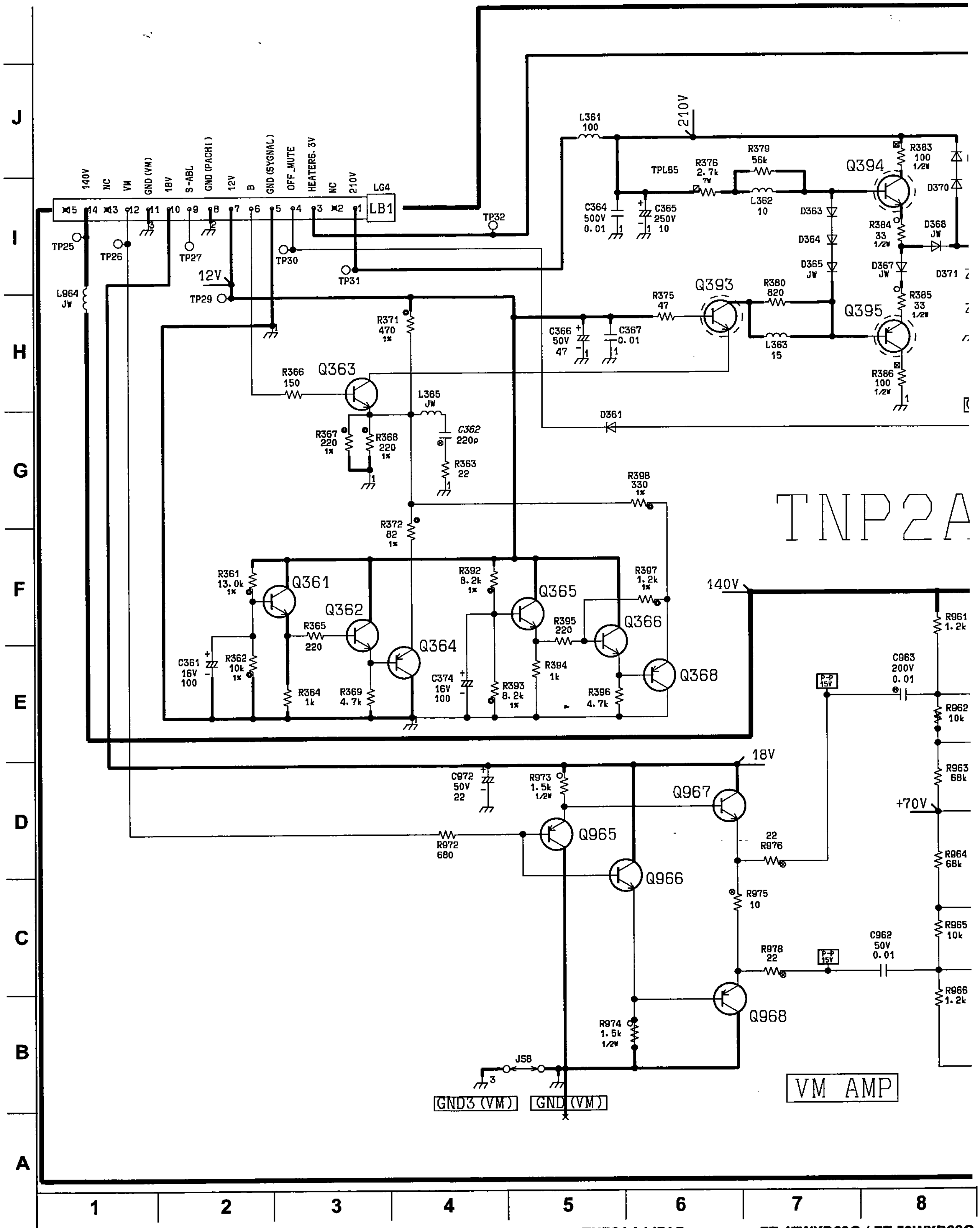

MD2406
MD021
IC6515
IC6516
IC6513
128Mbit SDRAM
IC6514
or
128Mbit
TNP2
Q6501
Q6502
Q6505
Q6506
3.3V
1.8V
9V
INPUT_GND
K-J1 (PP)
K-J2 (MP)
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
JG-BOARD
3 of 4
TNP2AA140
PT-47WXD63G / PT-53WXD63G

22.49. JG-Board schematic 4 of 4



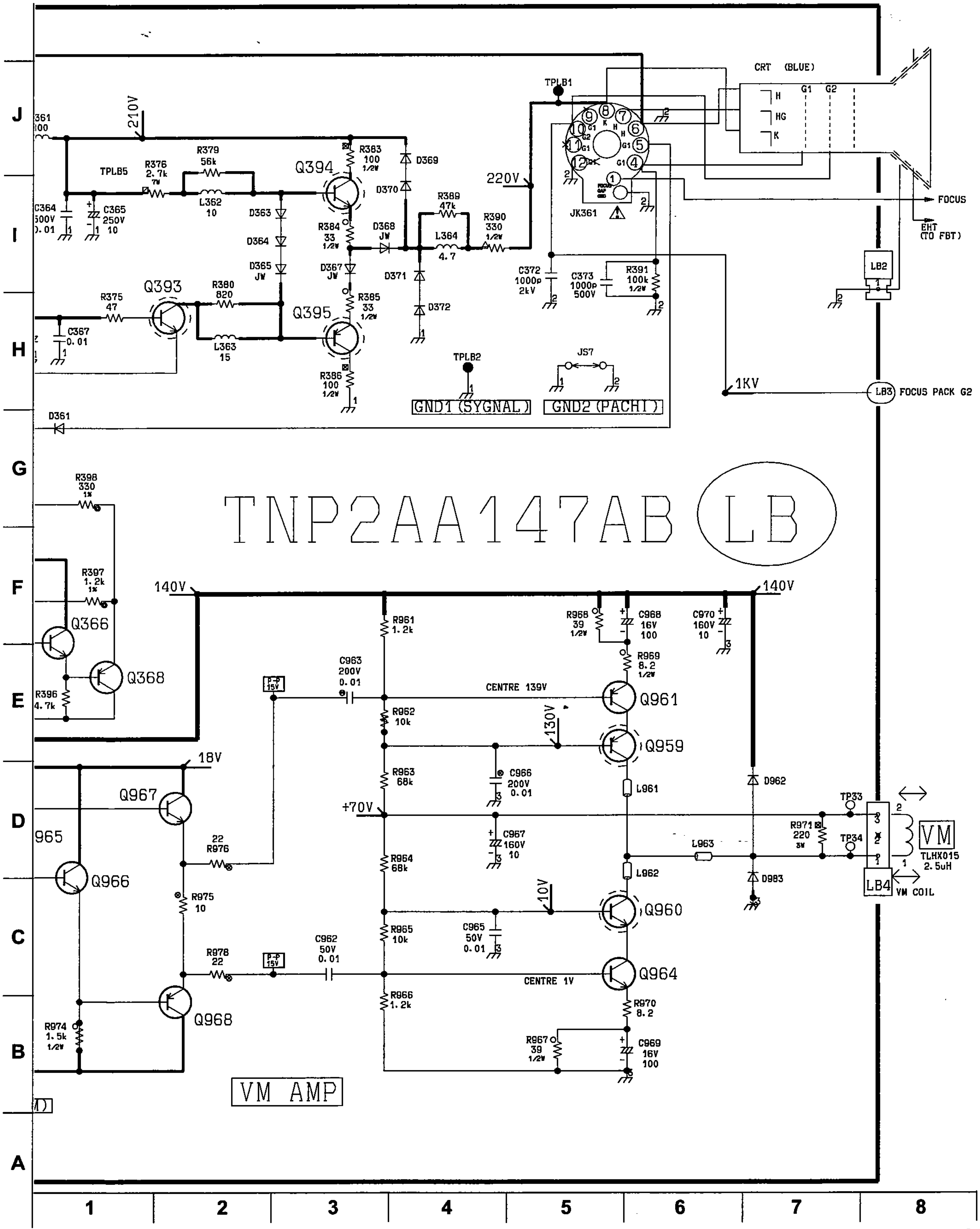
MD0217
IC6515
IC6516
IC6518
IC6519
SI-3018KS-TL
IC6513
IC6520
Q6502
Q6503
Q6504
Q6505
Q6506
JG3
DG7
1 INT1 -> GND : H4
2 INT0 -> GND : H4
3 IO0
4 GND
5 C
6 GND
7 Y
8 RESET
9 GND
10 RXD
11 TXD
12 GND
13 9V
14 5V
LC6503
LC6504
INPUT_GND
SYS_INT1
SYS_INT0
SYS_IO0
RXD
TXD
YOUT
COUT
SYS_RST
MAIN_RST
1.8V:100mA
it SDRAM
IC6514
or
128Mbit
SDRAM GND
PCCARD GND
Digital GND
TNP2AA140 (JG)
A
B
C
D
E
F
G
H
I
J
1
2
3
4
5
6
7
8

22.50. LB-Board schematic 1 of 2



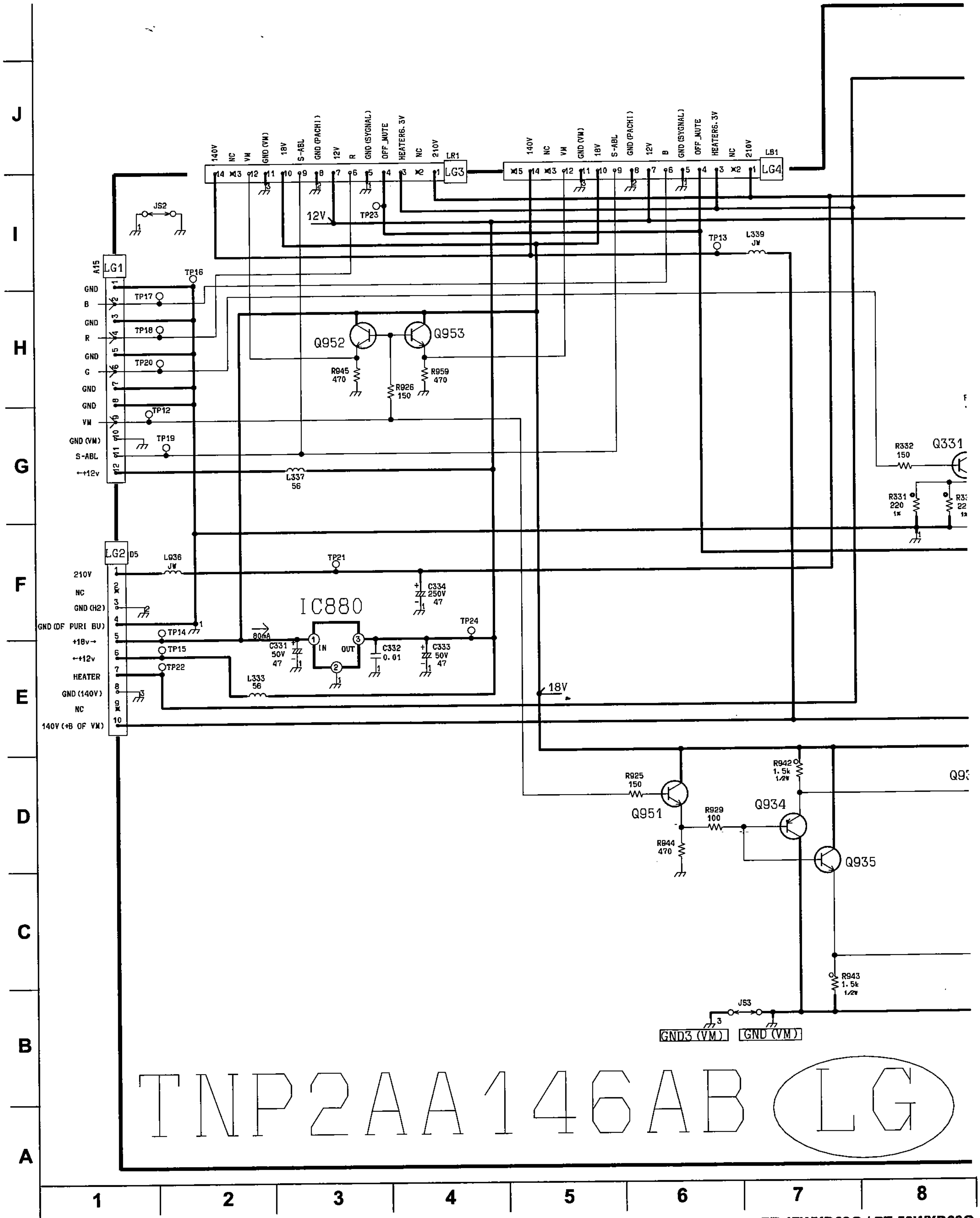
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
140V
NC
VM
GND (VM)
18V
S-ABL
GND (PACHI)
12V
B
GND (SYGNAL)
OFF_MUTE
HEATERS. 3V
NC
210V
LG4
LB1
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
TP25
TP26
TP27
TP30
TP31
TP32
TP29
12V
L964
JW
210V
L361
100
C364
500V
0.01
C365
250V
10
TPLB5
R376
2.7k
R379
56k
L362
10
Q394
R383
100
1/2W
D370
D363
D364
D365
JW
R384
33
1/2W
D368
JW
D367
JW
D371
R385
33
1/2W
Q393
Q395
R375
47
R380
820
L363
15
C366
50V
47
C367
0.01
R386
100
1/2W
R371
470
1%
R366
150
Q363
L365
JW
C362
220p
R363
22
R367
220
1%
R368
220
1%
D361
R398
330
1%
TNP2A
R372
82
1%
R361
13.0k
1%
Q361
Q362
R365
220
R362
10k
1%
C361
16V
100
R364
1k
R369
4.7k
Q364
R392
8.2k
1%
Q365
R393
8.2k
1%
C374
16V
100
R395
220
R394
1k
Q366
R397
1.2k
1%
R396
4.7k
Q368
140V
R961
1.2k
C963
200V
0.01
P-P
15V
R962
10k
R963
68k
18V
C972
50V
22
R973
1.5k
1/2W
Q967
Q965
R972
680
Q966
22
R976
+70V
R964
68k
R975
10
R965
10k
R978
22
P-P
15V
C962
50V
0.01
Q968
R966
1.2k
R974
1.5k
1/2W
JS8
3
GND3 (VM)
GND (VM)
VM AMP

22.51. LB-Board schematic 2 of 2

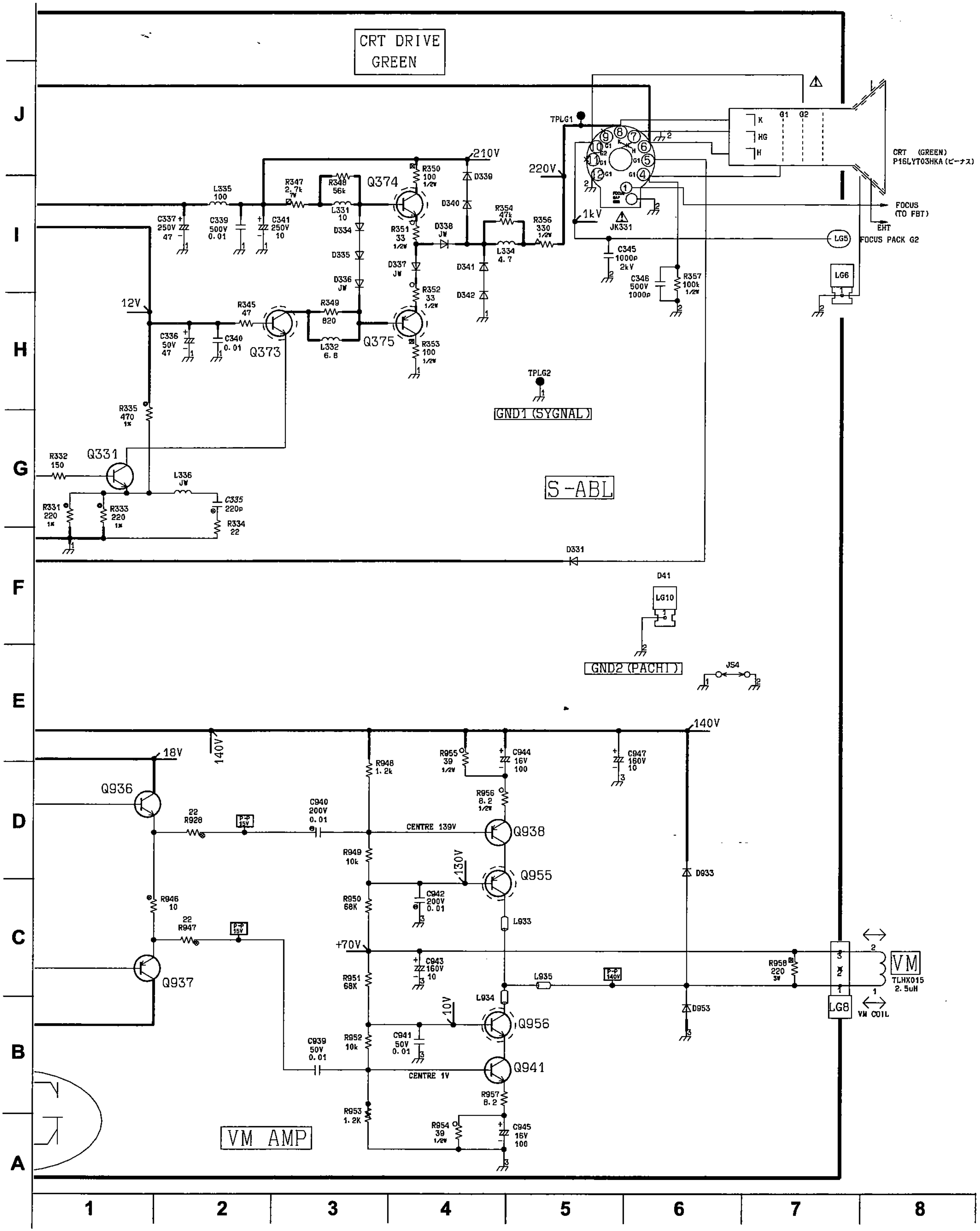


J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
210V
361
100
TPLB5
R376
2.7k
R379
56k
L362
10
Q394
R383
100
1/2W
D369
D370
D363
D364
D365
JW
R384
33
1/2W
D368
JW
D367
JW
R389
47k
L364
4.7
R390
330
1/2W
220V
D371
D372
C364
500V
0.01
C365
250V
10
Q393
R375
47
R380
820
L363
15
Q395
R385
33
1/2W
R386
100
1/2W
C367
0.01
TPLB1
CRT (BLUE)
H
HG
K
G1
G2
JK361
FOCUS
EHT
(TO FBT)
C372
1000p
2kV
C373
1000p
500V
R391
100k
1/2W
LB2
1KV
LB3
FOCUS PACK G2
TPLB2
JS7
GND1 (SYGNAL)
GND2 (PACHI)
D361
R398
330
1%
TNP2AA147AB
LB
R397
1.2k
1%
Q366
Q368
R396
4.7k
140V
140V
R961
1.2k
R968
39
1/2W
C968
16V
100
C970
160V
10
R969
8.2
1/2W
C963
200V
0.01
P-P 15V
CENTRE 139V
Q961
R962
10k
130V
Q959
18V
Q967
R963
68k
C966
200V
0.01
L961
D962
+70V
C967
160V
10
TP33
R971
220
3W
TP34
L963
VM
TLHX015
2.5uH
LB4
VM COIL
965
Q966
22
R976
R975
10
R964
68k
L962
D963
10V
Q960
R965
10k
C965
50V
0.01
R978
22
P-P 15V
C962
50V
0.01
CENTRE 1V
Q964
Q968
R966
1.2k
R970
8.2
R974
1.5k
1/2W
R967
39
1/2W
C969
16V
100
VM AMP

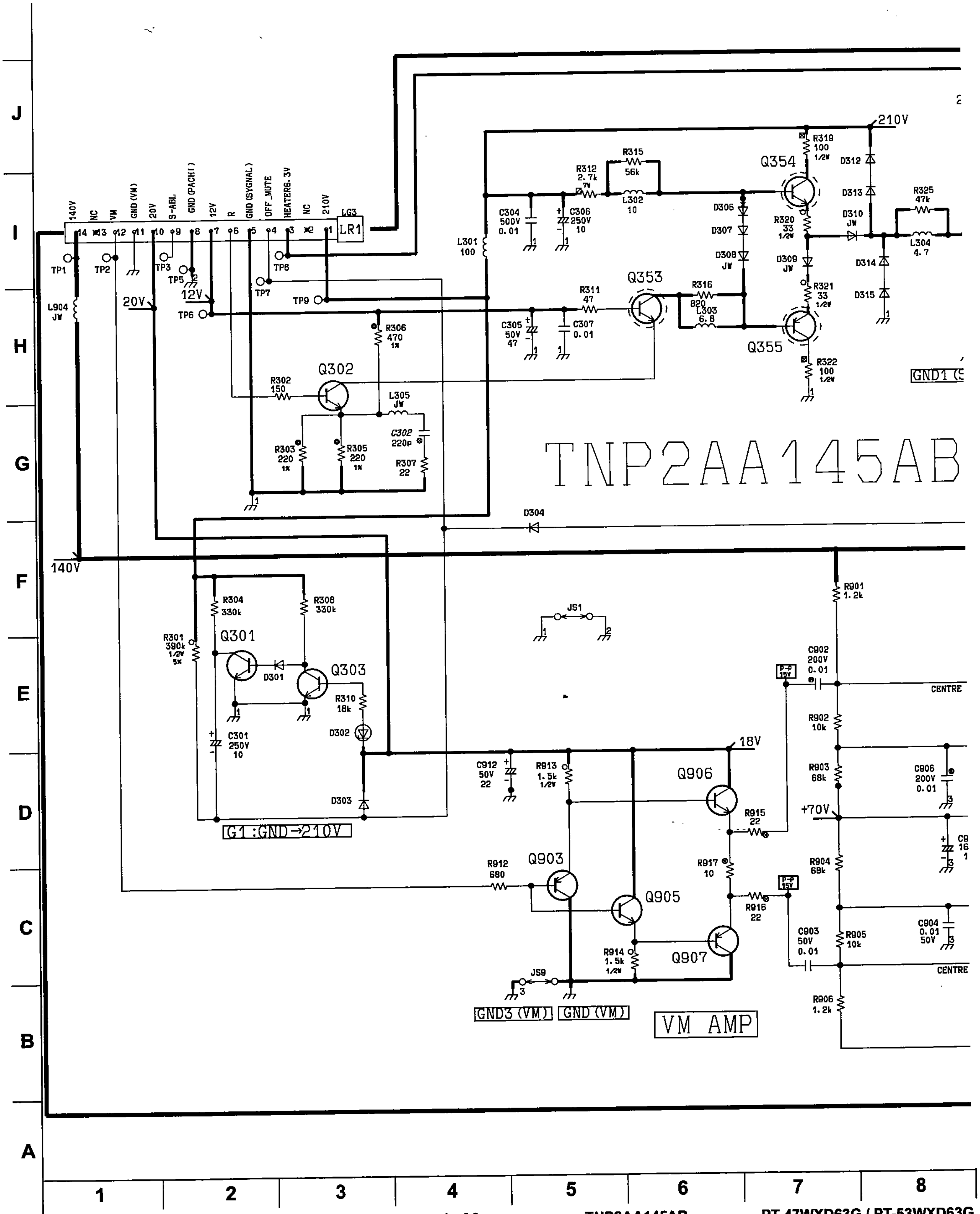
22.52. LG-Board schematic 1 of 2


J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
LG1
A15
GND
B
GND
R
GND
G
GND
GND
VM
GND (VM)
S-ABL
←+12v
TP17
TP18
TP20
TP12
TP19
TP16
JS2
LG2
D5
210V
NC
GND (H2)
GND (OF PURI BU)
+18v→
←+12v
HEATER
GND (140V)
NC
140V (+B OF VM)
L936
JW
TP14
TP15
TP22
TP21
C334
250V
47
IC880
IN
OUT
80mA
C331
50V
47
C332
0.01
C333
50V
47
TP24
L333
56
L337
56
LR1
LG3
140V
NC
VM
GND (VM)
18V
S-ABL
GND (PACHI)
12V
R
GND (SYGNAL)
OFF_MUTE
HEATER6.3V
NC
210V
LB1
LG4
B
12V
TP23
TP13
L339
JW
Q952
Q953
R945
470
R959
470
R926
150
R332
150
Q331
R331
220
1W
R33
22
18V
R925
150
Q951
R929
100
R944
470
R942
1.5k
1/2W
Q934
Q935
Q93
R943
1.5k
1/2W
JS3
GND3 (VM)
GND (VM)
TNP2AA146AB
LG

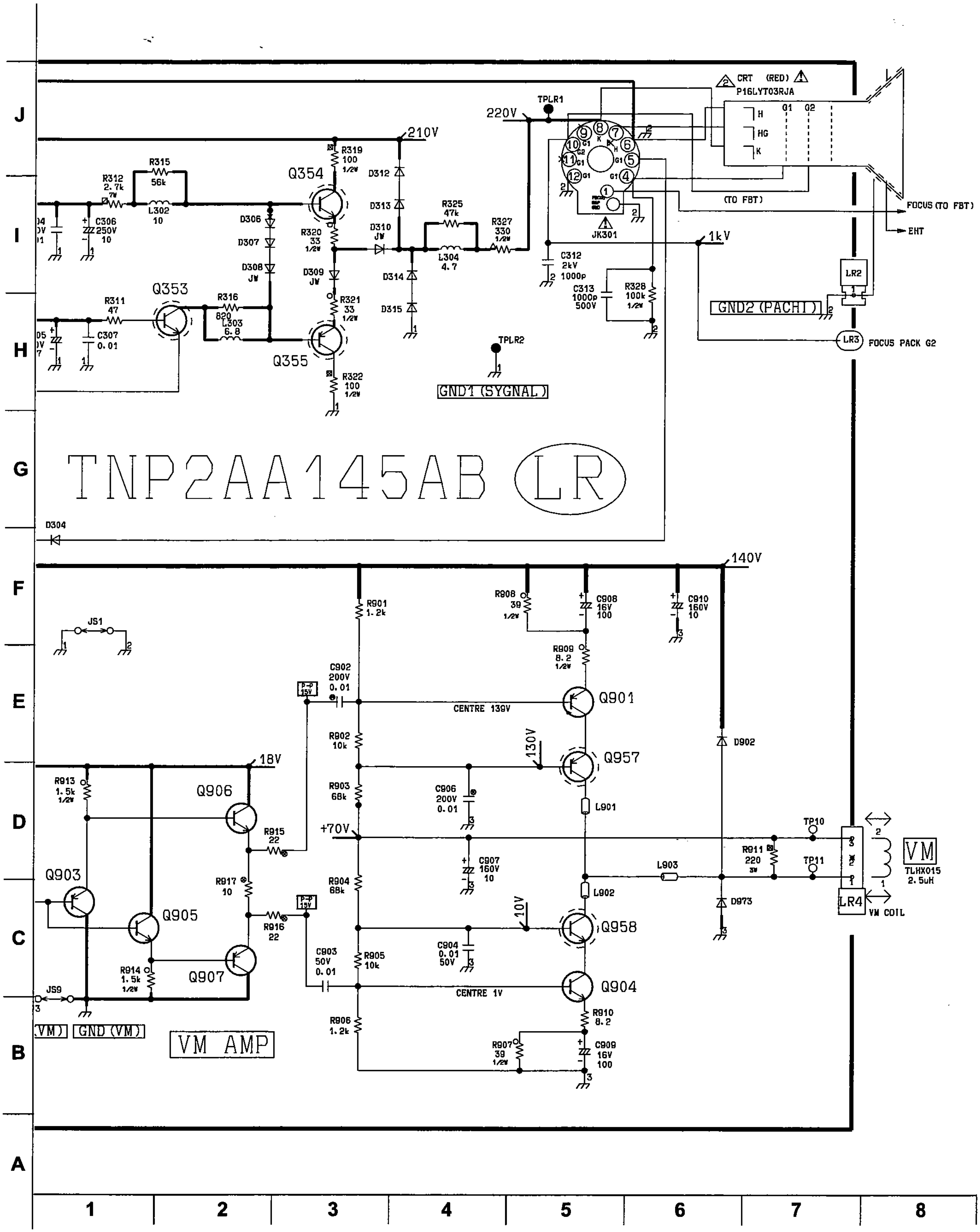
22.53. LG-Board schematic 2 of 2


CRT DRIVE
GREEN
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
TPLG1
210V
220V
1kV
JK331
R350 100 1/2W
D339
D340
R347 2.7k 7W
R348 56k
Q374
L335 100
L331 10
C337 250V 47
C339 500V 0.01
C341 250V 10
D334
D335
D336 JW
R351 33 1/2W
D338 JW
D337 JW
R354 47k
R356 330 1/2W
L334 4.7
D341
D342
R352 33 1/2W
R353 100 1/2W
Q375
12V
R345 47
R349 820
L332 6.8
C336 50V 47
C340 0.01
Q373
C345 1000p 2kV
C346 500V 1000p
R357 100k 1/2W
K
HG
H
G1
G2
CRT (GREEN)
P16LYT03HKA (ビーナス)
FOCUS (TO FBT)
EHT
LG5
FOCUS PACK G2
LG6
TPLG2
GND1 (SYGNAL)
R335 470 1W
Q331
R332 150
L336 JW
C335 220p
R331 220 1W
R333 220 1W
R334 22
S-ABL
D331
D41
LG10
GND2 (PACHI)
JS4
140V
18V
Q936
R928 22
P-P 15V
C940 200V 0.01
R948 1.2k
CENTRE 139V
R955 39 1/2W
C944 16V 100
R956 8.2 1/2W
Q938
130V
Q955
R949 10k
C942 200V 0.01
R950 68K
L933
C947 160V 10
D933
R946 10
R947 22
P-P 15V
Q937
+70V
C943 160V 10
R951 68K
L935
P-P 140V
L934
10V
Q956
D953
R958 220 3W
VM
TLHX015 2.5uH
LG8
VM COIL
C941 50V 0.01
R952 10k
C939 50V 0.01
CENTRE 1V
Q941
R957 8.2
R953 1.2K
R954 39 1/2W
C945 16V 100
VM AMP

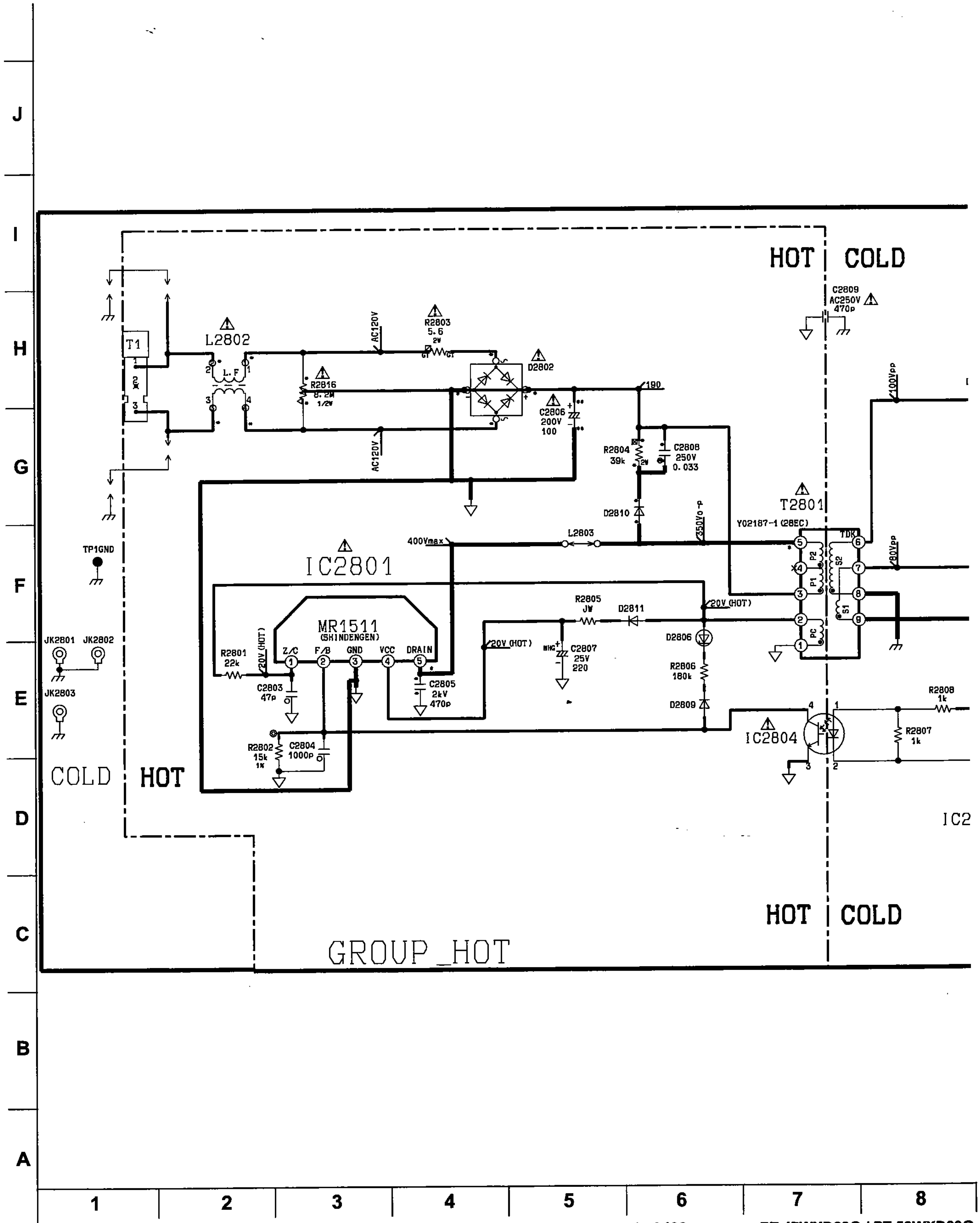
22.54. LR-Board schematic 1 of 2


J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
140V
NC
VM
GND (VM)
20V
S-ABL
GND (PACH1)
12V
R
GND (SYGNAL)
OFF_MUTE
HEATER6.3V
NC
210V
LG3
LR1
TP1
TP2
TP3
TP4
TP5
TP6
TP7
TP8
TP9
L904
JW
20V
12V
140V
L301
100
C304
500V
0.01
C306
250V
10
R312
2.7k
R315
56k
L302
10
Q354
R319
100
1/2W
210V
D312
D313
D310
JW
R325
47k
L304
4.7
D306
D307
D308
JW
R320
33
1/2W
D309
JW
D314
D315
R311
47
Q353
R316
820
L303
6.8
R321
33
1/2W
C305
50V
47
C307
0.01
Q355
R322
100
1/2W
GND1
R306
470
1%
Q302
R302
150
L305
JW
C302
220p
R303
220
1%
R305
220
1%
R307
22
TNP2AA145AB
D304
R304
330k
R308
330k
R301
390k
1/2W
5%
Q301
D301
Q303
R310
18k
D302
C301
250V
10
D303
G1 :GND→210V
R901
1.2k
JS1
C902
200V
0.01
P-P
15V
CENTRE
R902
10k
18V
C912
50V
22
R913
1.5k
1/2W
Q906
R903
68k
C906
200V
0.01
R915
22
+70V
R917
10
R904
68k
R912
680
Q903
Q905
R916
22
P-P
15V
C903
50V
0.01
R905
10k
C904
0.01
50V
R914
1.5k
1/2W
Q907
CENTRE
JS9
R906
1.2k
GND3 (VM)
GND (VM)
VM AMP

22.55. LR-Board schematic 2 of 2


J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
CRT (RED)
P16LYT03RJA
H
HG
K
G1
G2
TPLR1
220V
210V
R319
100
1/2W
Q354
D312
D313
R325
47k
R327
330
1/2W
R315
56k
R312
2.7k
7W
L302
10
C306
250V
10
D306
D307
D308
JW
R320
33
1/2W
D310
JW
L304
4.7
D309
JW
D314
D315
R321
33
1/2W
Q353
R311
47
R316
820
L303
6.8
C307
0.01
Q355
R322
100
1/2W
TPLR2
GND1 (SYGNAL)
JK301
(TO FBT)
FOCUS (TO FBT)
EHT
1kV
C312
2kV
1000p
C313
1000p
500V
R328
100k
1/2W
LR2
GND2 (PACHI)
LR3
FOCUS PACK G2
TNP2AA145AB
LR
D304
140V
R901
1.2k
R908
39
1/2W
C908
16V
100
C910
160V
10
R909
8.2
1/2W
JS1
C902
200V
0.01
P-P 15V
CENTRE 139V
Q901
R902
10k
130V
Q957
D902
18V
R913
1.5k
1/2W
Q906
R903
68k
C906
200V
0.01
L901
R915
22
+70V
TP10
R911
220
3W
TP11
L903
VM
TLHX015
2.5uH
Q903
R917
10
R904
68k
C907
160V
10
L902
10V
D973
LR4
VM COIL
Q905
P-P 15V
R916
22
Q958
C904
0.01
50V
C903
50V
0.01
R905
10k
R914
1.5k
1/2W
Q907
JS9
CENTRE 1V
Q904
R910
8.2
R906
1.2k
R907
39
1/2W
C909
16V
100
VM)
GND (VM)
VM AMP

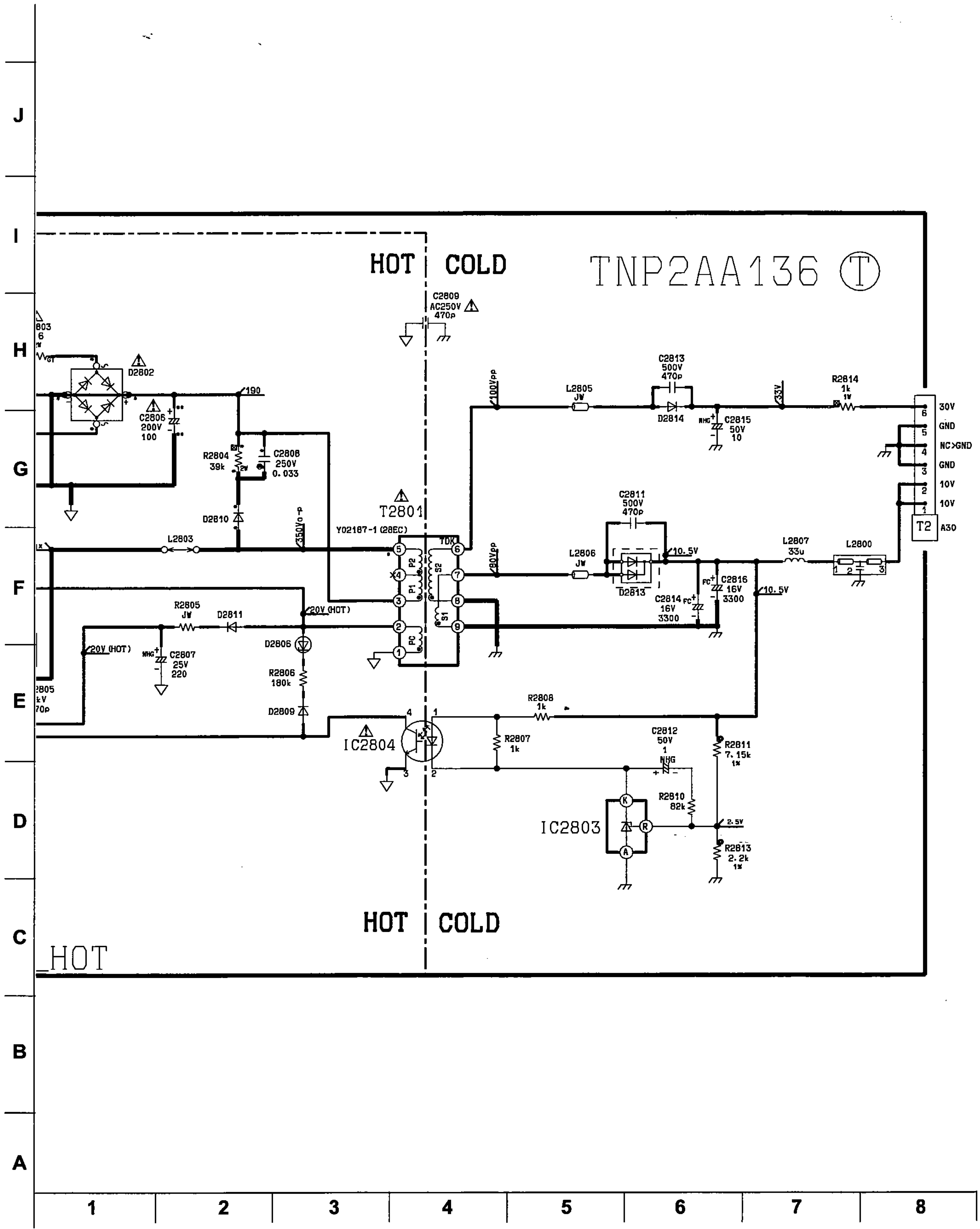
22.56. T-Board schematic 1 of 2



J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
HOT
COLD
C2809
AC250V
470p
T1
L2802
L.F
AC120V
R2803
5.6
2W
R2816
8.2M
1/2W
D2802
C2806
200V
100
190
100Vpp
R2804
39k
2W
C2808
250V
0.033
AC120V
D2810
T2801
Y02187-1 (28EC)
TDK
350Vo-p
L2803
400Vmax
80Vpp
TP1GND
IC2801
MR1511
(SHINDENGEN)
Z/C
F/B
GND
VCC
DRAIN
20V (HOT)
R2801
22k
C2803
47p
C2804
1000p
R2802
15k
1%
C2805
2kV
470p
20V (HOT)
C2807
25V
220
R2805
JW
D2811
20V (HOT)
D2806
R2806
180k
D2809
IC2804
R2808
1k
R2807
1k
P2
P1
PC
S2
S1
JK2801
JK2802
JK2803
COLD
HOT
IC2
HOT
COLD
GROUP_HOT

T-BOARD 1 of 2 TNP2AA136 PT-47WXD63G / PT-53WXD63G

22.57. T-Board schematic 2 of 2


J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
HOT
COLD
TNP2AA136 Ⓣ
C2809
AC250V
470p
D2802
190
C2806
200V
100
R2804
39k
C2808
250V
0.033
D2810
L2803
350Vp-p
T2801
Y02167-1 (28EC)
TDK
P2
P1
PC
S2
S1
R2805
JW
D2811
20V (HOT)
C2807
25V
220
D2806
R2806
180k
D2809
IC2804
100Vpp
L2805
JW
C2813
500V
470p
D2814
33V
C2815
50V
10
R2814
1k
1W
30V
GND
NC>GND
GND
10V
10V
T2
A30
C2811
500V
470p
80Vpp
L2806
JW
10.5V
D2813
C2814
16V
3300
C2816
16V
3300
L2807
33u
L2800
10.5V
R2808
1k
R2807
1k
C2812
50V
1
NHG
R2811
7.15k
1%
R2810
82k
IC2803
2.5V
R2813
2.2k
1%
_HOT

22.58. Voltages

A - BOARD - TNP2AH051

IC1101	
1	0.00
2	0.00
3	0.00
4	0.00
5	2.30
6	2.60
7	0.00
8	3.30

IC1112	
1	0.00
2	0.00
3	0.00
4	0.00
5	4.90
6	4.90
7	4.90
8	4.90

IC2302			
1	-23.00	14	-21.60
2	-23.00	15	0.00
3	0.30	16	-5.50
4	22.10	17	0.00
5	9.60	18	0.00
6	5.00	19	0.00
7	0.00	20	0.00
8	2.60	21	9.50
9	0.00	22	22.10
10	0.00	23	0.20
11	0.00	24	-23.00
12	5.30	25	-12.50
13	0.00		

IC2451			
1	4.40	16	8.90
2	4.50	17	4.70
3	4.50	18	0.00
4	4.50	19	4.30
5	4.50	20	4.10
6	4.50	21	4.50
7	4.50	22	4.50
8	4.50	23	4.50
9	1.60	24	4.50
10	4.50	25	4.50
11	1.60	26	4.50
12	1.60	27	4.50
13	4.90	28	4.50
14	4.90	29	4.50
15	0.00	30	4.40

IC2851	
1	0.00
2	10.40
3	7.70
4	5.00
5	6.70

IC871	
1	19.40
2	5.10
3	0.00
4	1.30
5	6.70

IC872	
1	19.40
2	9.00
3	0.00
4	9.00
5	2.30

IC873	
1	19.40
2	2.60
3	0.00
4	1.30
5	6.70

IC874	
1	19.40
2	5.10
3	0.00
4	1.30
5	6.70

A - BOARD - TNP2AH051

	Q2301	Q2302	Q2304	Q2451	Q2452	Q2501	Q2502	Q2503	Q2304
B	19.50	19.50	0.10	4.50	4.50	2.80	2.80	2.90	10.90
C	-0.10	-1.30	19.50	8.90	8.90	10.90	10.90	10.90	3.30
E	13.50	13.50	0.20	3.80	3.80	2.20	2.20	2.30	11.50

	Q2505	Q2506	Q2507	Q2508	Q2509	Q2510	Q2516	Q2517	Q2522
B	10.90	10.90	3.30	3.30	3.50	6.30	18.80	0.00	3.40
C	3.30	3.50	0.00	0.00	0.00	0.00	19.40	0.00	11.40
E	11.50	11.50	3.90	4.00	4.10	4.00	18.60	0.70	2.80

	Q2525	Q2528
B	3.40	3.50
C	11.40	11.40
E	2.80	2.90

	Q2801
G	0.00
D	10.30
S	10.40

	Q2802	Q2803	Q931	Q932	Q933
B	0.70	2.90	6.70	5.00	19.20
C	0.00	10.90	18.80	6.10	19.40
E	0.00	2.30	6.10	4.40	-0.70

D - BOARD - TNP2AH056

IC1501	
1	10.80
2	0.00
3	0.00
4	0.00
5	2.40
6	2.40
7	1.40
8	12.00

IC701	
1	0.20
2	5.30
3	4.70
4	0.00
5	1.60
6	0.70
7	9.50
8	12.00

IC7001			
1	0.00	10	19.30
2	0.00	11	0.00
3	-19.40	12	-20.50
4	-20.50	13	0.00
5	19.30	14	0.00
6	-0.30	15	-0.20
7	-0.30	16	-0.20
8	-20.40	17	-20.50
9	-0.30	18	0.00

↓IC801	
1	1.40
2	0.40
3	0.00
4	0.00
5	0.00
6	5.70
7	20.50
8	0.00
9	6.00

IC811	
1	19.50
2	18.50
3 ↓	0.00
4 ↓	5.90

IC451	
1	0.00
2	17.30
3	-17.00
4	-18.50
5	-0.10
6	17.10
7	0.00

IC7002			
1	0.00	10	19.30
2	0.00	11	-0.40
3	-19.40	12	-0.40
4	-20.50	13	0.20
5	19.30	14	0.00
6	-0.10	15	-0.20
7	-0.10	16	-0.00
8	-20.40	17	-20.50
9	-0.10	18	0.00

IC802	
1	139.40
2	18.50
3	0.00

IC805	
1	19.70
2	0.00
3	12.00

	Q1503	Q1504	Q1505	Q406
B	9.80	12.00	6.10	-0.70
C	6.20	404.80	10.40	0.00
E	10.40	11.40	6.60	0.00

	Q501
G	5.30
D	16.50
S	0.00

	Q509	Q510	Q512
B	29.10	31.60	4.40
C	138.90	138.90	8.30
E	31.60	31.10	3.80

	Q513	Q551	Q606
B	0.30	-0.20	0.00
C	5.30	-98.90	9.80
E	0.00	0.00	0.00

	Q701
G	9.50
D	27.00
S	0.00

	Q7006	Q7007	Q7060	Q7061
B	-20.50	-20.50	19.30	-20.50
C	-19.40	-19.40	0.00	19.30
E	-20.50	-20.50	19.50	-20.70

	Q801
G	5.50
S	0.01
D	43.30

	Q802	Q803	Q854
B	0.70	20.50	138.90
C	0.20	0.00	0.00
E	0.00	20.50	139.20

LR - BOARD - TNPAA145AB

	Q301	Q302	Q303	Q353	Q354	Q355	Q901
B	0.00	0.60	0.60	12.00	176.30	175.00	137.90
C	215.00	0.00	0.00	174.70	218.30	0.00	130.10
E	0.00	0.00	0.00	11.50	175.90	175.60	138.50

	Q903	Q904	Q905	Q906	Q907	Q957	Q958
B	0.10	1.00	0.10	0.70	0.00	129.40	9.43
C	0.00	8.90	19.30	19.30	0.00	69.60	69.60
E	0.80	0.30	0.00	0.40	0.40	130.00	8.86

LG - BOARD - TNPAA146AB

IC880	
1	19.30
2	0.00
3	12.00

	Q331	Q373	Q374	Q375	Q934	Q935	Q936	Q937
B	4.10	12.00	172.10	171.00	0.00	0.00	0.70	0.00
C	11.60	170.70	218.80	0.40	0.00	19.30	19.30	0.00
E	3.80	11.60	171.60	171.60	0.70	0.00	0.40	0.40

	Q938	Q941	Q951	Q952	Q953	Q955	Q956
B	137.90	1.00	-0.90	-1.10	-1.10	129.70	9.60
C	130.10	9.00	19.30	19.30	19.30	70.00	70.00
E	138.60	0.30	0.00	0.00	0.00	130.10	9.00

LB - BOARD - TNPAA147AB

	Q361	Q362	Q363	Q364	Q365	Q366	Q368	Q393	Q394
B	5.20	4.50	3.90	3.90	5.90	5.10	0.00	12.00	176.10
C	12.00	12.00	11.50	0.00	12.00	12.00	0.00	174.80	218.00
E	4.50	3.90	3.70	3.50	5.30	4.50	0.40	11.60	175.70

	Q395	Q959	Q960	Q961	Q964	Q965	Q966	Q967	Q968
B	174.60	129.40	9.60	137.90	1.00	0.00	0.00	0.70	0.00
C	0.40	71.00	71.00	130.00	9.00	0.00	19.30	19.30	0.00
E	175.40	130.00	9.10	138.50	0.40	0.70	0.00	0.40	0.40

T - BOARD - TNP2AA136

IC2801↓

1 .....3.30
2 .....1.90
3 .....0.00
4 ....15.70
5 .....-8.20

IC2803

1 K ... 8.20
2 R ... 2.40
3 A ... 0.00

IC2804

1 ...... 9.20
2 ...... 8.20
3 ↓..... 0.00
4 ↓.... 1.90

Connector Voltages For Non-serviceable Boards

DC - BOARD - TNP2AA151

D21--DC1	
1	0.00
2	4.90
3	4.90
4	0.00
5	4.90
6	0.50
7	0.00
8	0.50
9	0.10
10	5.00

D22--DC2	
1	0.00
2	-0.10
3	-0.30
4	-0.10
5	-0.30
6	-0.10
7	-0.30
8	0.00
9	0.00
10	-20.10

D23--DC3	
1	19.50
2	0.00
3	0.00
4	0.00
5	0.00
6	0.00
7	4.80
8	4.80
9	0.00
10	1.40

DV - BOARD - TNP2AA133

A51--DV1			
1	0.00	14	2.10
2	2.50	15	0.00
3	0.00	16	2.50
4	2.50	17	0.00
5	0.00	18	3.30
6	5.00	19	3.30
7	5.00	20	3.30
8	0.00	21	0.00
9	8.90	22	2.90
10	8.90	23	4.20
11	0.00	24	4.80
12	2.10	25	4.80
13	0.00		

JG - BOARD - TNP2AA140

JG3--DG7			
1	0.00	8	3.00
2	0.00	9	0.00
3	3.30	10	3.30
4	0.00	11	3.30
5	0.70	12	0.00
6	0.00	13	8.80
7	0.50	14	4.90

DG - BOARD - TNP2AA132

A31--DG1							
1	2.10	18	0.00	35	0.50	52	2.50
2	0.00	19	0.00	36	8.90	53	0.30
3	0.00	20	0.00	37	8.90	54	5.00
4	3.40	21	0.00	38	0.30	55	3.00
5	1.40	22	5.00	39	0.50	56	0.00
6	0.00	23	5.00	40	0.00	57	3.30
7	0.10	24	0.00	41	7.80	58	0.00
8	3.10	25	0.00	42	0.00	59	0.00
9	4.80	26	2.70	43	0.00	60	0.00
10	0.00	27	0.00	44	0.00	61	3.30
11	4.80	28	0.00	45	2.60	62	2.80
12	3.40	29	0.10	46	2.50	63	3.20
13	0.00	30	0.70	47	1.80	64	4.80
14	0.00	31	0.50	48	2.50	65	4.90
15	0.00	32	0.70	49	0.30		
16	1.70	33	0.00	50	2.50		
17	0.00	34	0.70	51	0.00		

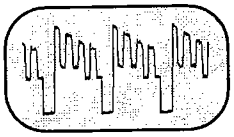
A32--DG2							
1	1.50	14	2.10	27	3.80	40	2.20
2	2.10	15	0.00	28	1.10	41	0.00
3	5.00	16	0.00	29	3.80	42	2.20
4	1.50	17	0.00	30	0.80	43	8.90
5	0.10	18	2.20	31	4.20	44	8.90
6	2.60	19	0.00	32	4.90	45	5.00
7	0.00	20	2.20	33	4.80	46	5.00
8	2.30	21	0.00	34	2.90	47	0.00
9	-0.10	22	3.80	35	3.30	48	2.50
10	3.30	23	0.00	36	3.30	49	0.00
11	3.00	24	3.80	37	3.30	50	2.50
12	3.30	25	3.30	38	2.60		
13	0.00	26	1.10	39	0.00		

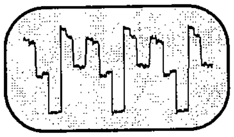
DT - BOARD - TNP2AA144

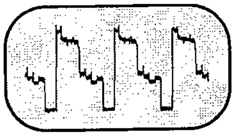
A41--JK8007 (DT-Board)							
1	0.00	18	1.10	35	3.30	52	10.00
2	0.80	19	0.30	36	3.00	53	10.00
3	30.10	20	3.80	37	3.30	54	0.00
4	30.00	21	0.00	38	0.00	55	0.00
5	0.00	22	3.80	39	0.00	56	0.00
6	0.00	23	0.00	40	2.40	57	0.00
7	0.00	24	2.20	41	0.00	58	10.00
8	0.00	25	0.70	42	2.60	59	10.00
9	0.00	26	2.20	43	0.00	60	10.00
10	0.80	27	0.70	44	1.50	61	10.00
11	0.00	28	0.00	45	0.00	62	0.00
12	1.10	29	0.70	46	4.80	63	0.00
13	0.00	30	0.00	47	0.00	64	7.80
14	1.10	31	3.30	48	4.80	65	0.00
15	0.00	32	0.00	49	0.00		
16	0.80	33	3.30	50	10.00		
17	3.30	34	2.10	51	10.00		

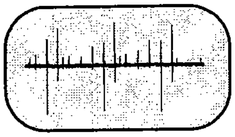
22.59. Waveforms

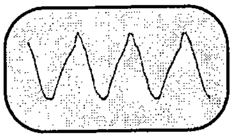
A-Board TNP2AH051

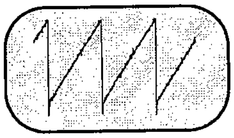

① **6.08 Vp-p**
A15 PIN 2 (BLUE OUT)

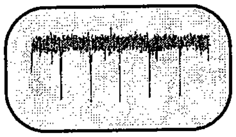

② **5.60 Vp-p**
A15 PIN 4 (RED OUT)

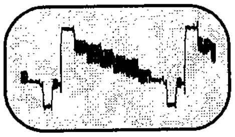

③ **6.08 Vp-p**
A15 PIN 6 (GREEN OUT)

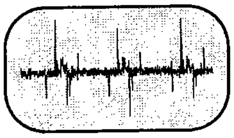

④ **2.74 Vp-p**
A15 PIN 9 (VM OUT)

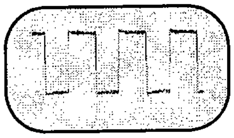

⑤ **5.84 Vp-p**
A15 PIN 11 (S-ABL)

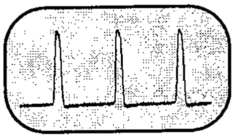

⑥ **2.04 Vp-p**
A4 PIN 1 (V-SAW)

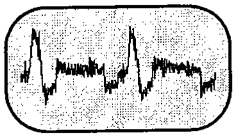

⑦ **.292 Vp-p**
A4 PIN 4 (EHT ADJ)

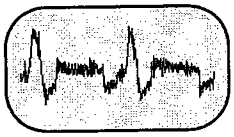

⑧ **1.08 Vp-p**
A32 PIN 14 (MAIN VIDEO)

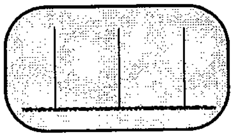

⑨ **0.26 Vp-p**
A2 PIN 1 (HD/SD)

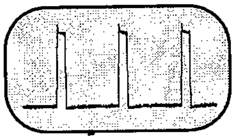

⑩ **3.56Vp-p**
A2 PIN 3 (H-DRV)

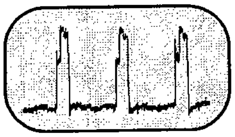

⑪ **5.65 Vp-p**
A2 PIN 5 (FBP)

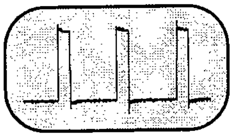

⑫ **0.178 Vp-p**
A2 PIN 11 (SOS3 CONV)

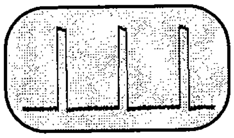

⑬ **0.176 Vp-p**
A2 PIN 15 (SOS)


⑭ **3.36 Vp-p**
A3 PIN 9 (VD TO CONV)

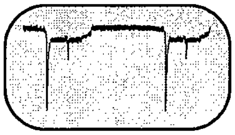

⑮ **3.36 Vp-p**
A3 PIN 11 (HD TO CONV)

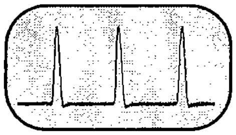

⑯ **0.472 Vp-p**
A3 PIN 13 (H-SYNC)

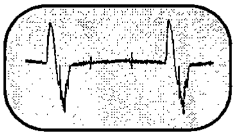

⑰ **3.52 Vp-p**
A3 PIN 15 (HBLK)

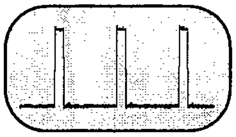

⑱ **3.6 Vp-p**
A3 PIN 16 (EW)

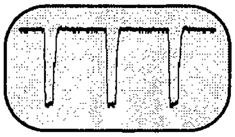
D-Board TNP2AH056

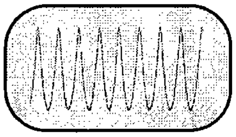

⑲ **12.6 Vp-p**
Q551-B

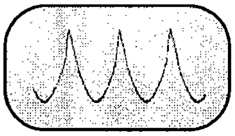

⑳ **1.56 kVp-p**
Q551-C

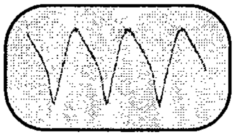

㉑ **0.65 Vp-p**
IC701 PIN 3

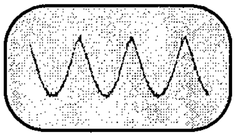

㉒ **3.60Vp-p**
IC701 PIN 6

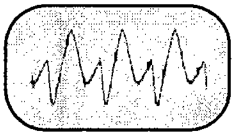

㉓ **13.4 Vp-p**
IC701 PIN 7

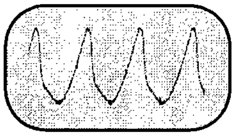

㉔ **2.28 Vp-p**
D23 PIN 10 (DAF)

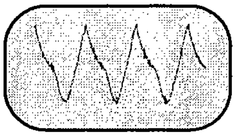

㉕ **2.02 Vp-p**
D22 PIN 2 (BV)


㉖ **2.04 Vp-p**
D22 PIN 3 (BH)

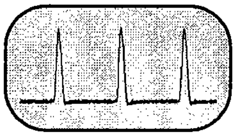

㉗ **1.44 Vp-p**
D22 PIN 4 (GV)


㉘ **.824 Vp-p**
D22 PIN 5 (GH)

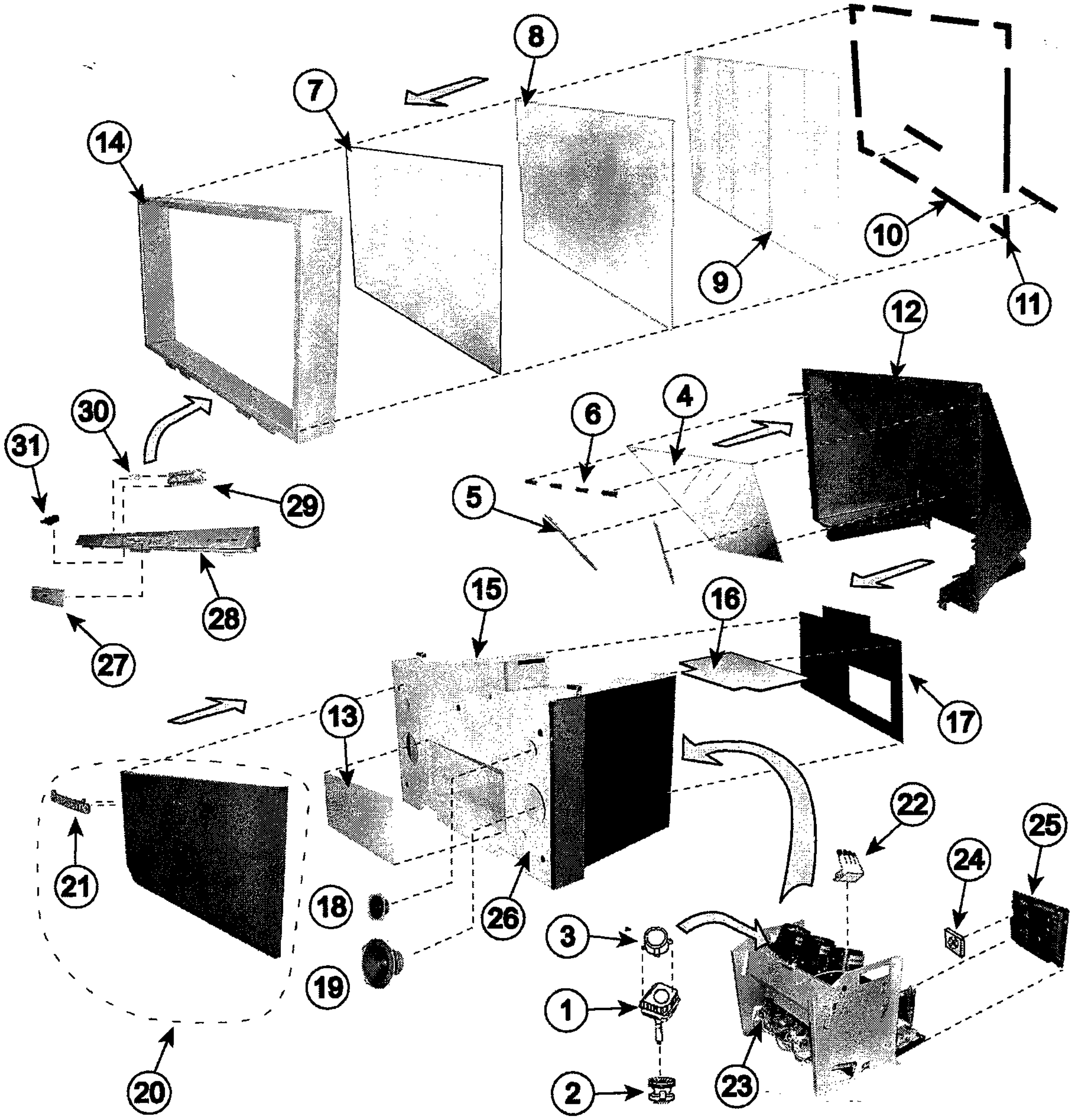

㉙ **1.94 Vp-p**
D22 PIN 6 (RV)


㉚ **1.17 Vp-p**
D22 PIN 7 (RH)

LG-Board TNP2AA146


㉛ **28.4 Vp-p**
TP22 (HEATER)

23 Parts location



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24 Parts list

24.1. Description of abbreviations guide

Important Safety Notice

Components identified by ⚠ mark have special characteristics important for safety.
When replacing any of these components, use manufacturer's specified parts.

Abbreviation of part name and description

1. Resistor

Example :
ERD25TJ104 **C** 100KΩ, **J**, 1/4W
Type Allowance

Type	Allowance
C : Carbon	F : ± 1%
F : Fuse	G : ± 2%
M : Metal Oxide Metal Film	J : ± 5% K : ± 10%
S : Solid	M : ± 20%
W : Wire Wound	

2. Capacitor

Example :
ECKF1H103ZF **C** 0.01µF, **Z**, 50V
Type Allowance

Type	Allowance
C : Carbon	C : ± 0.25pF
E : Electrolytic	D : ± 0.5pF
P : Polyester Polypropylene	F : ± 1pF G : ± 3%
T : Tantalum	J : ± 5%
	K : ± 10%
	L : ± 15%
	M : ± 20%
	P : ± 100%, -0%
	Z : ± 80%, -20%

24.2. Parts list

Ref. No.	Part No.	Part Name & Description	Remarks
		CAPACITORS	
C001	ECEA1CKA470B	CAP E 47UF-16V	
C002	ECJ2VC1H220J	CAP C 22PF-J-50V	
C003	ECJ2VC1H220J	CAP C 22PF-J-50V	
C004	ECEA1HKA4R7B	CAP E 4.7UF-50V	
C005	ECEA1HKA2R2B	CAP E 2.2UF-50V	
C006	EEUFC1A471B	CAP E 470UF-10V	
C011	ECJ2VF1H104Z	CAP C .1UF-Z-50V	
C012	ECJ2VF1H104Z	CAP C .1UF-Z-50V	
C017	ECJ2VF1H104Z	CAP C .1UF-Z-50V	
C021	ECEA1HKAR22B	CAP E .22UF-50V	
C023	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C024	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C026	ECJ2VF1H103Z	CAP C .01UF-Z-50V	
C027	ECA1CM101B	CAP E 100UF-16V	
C028	ECJ2VF1H103Z	CAP C .01UF-Z-50V	
C051	EEUFC1E470B	CAP E 47UF-25V	
C052	ECKR1H103ZF5	CAP C 1000PF-50V	
C301	F2A2E100A025	CAP E 10UF-250V	
C302	ECCR1H221JC5	CAP C 220PF-J-50V	
C304	ECKW2H103PU8	CAP C .01UF-P-500V	
C305	F2A1H470A162	CAP E 47UF-50V	
C306	F2A2E100A025	CAP E 10UF-250V	
C307	ECKR1H103ZF5	CAP C .01UF-Z-50V	
C312	ECKC3D102KBN	CAP C 1000PF-K-2KV	
C313	ECKR2H102KB5	CAP C 1000PF-K-500V	
C331	F2A1H470A162	CAP E 47UF-50V	
C332	ECKR1H103ZF5	CAP C .01UF-Z-50V	
C333	F2A1H470A162	CAP E 47UF-50V	
C334	F2A2E470A026	CAP E 47UF-250V	
C335	ECCR1H221JC5	CAP C 220PF-J-50V	
C336	F2A1H470A162	CAP E 47UF-50V	
C337	F2A2E470A026	CAP E 47UF-250V	
C339	ECKW2H103PU8	CAP C .01UF-P-500V	
C340	ECKR1H103ZF5	CAP C .01UF-Z-50V	
C341	F2A2E100A025	CAP E 10UF-250V	
C345	ECKC3D102KBN	CAP C 1000PF-K-2KV	
C346	ECKR2H102KB5	CAP C 1000PF-K-500V	
C361	F2A1C101A159	CAP E 100UF-16V	
C362	ECCR1H221JC5	CAP C 220PF-J-50V	
C364	ECKW2H103PU8	CAP C .01UF-P-500V	
C365	F2A2E100A025	CAP E 10UF-250V	
C366	F2A1H470A162	CAP E 47UF-50V	
C367	ECKR1H103ZF5	CAP C .01UF-Z-50V	
C372	ECKC3D102KBN	CAP C 1000PF-K-2KV	
C373	ECKR2H102KB5	CAP C 1000PF-K-500V	
C374	F2A1C101A159	CAP E 100UF-16V	
C405	ECA1EHG102E	CAP E 1000UF-25V	
C406	ECA1EHG102E	CAP E 1000UF-25V	
C407	TCJ2VF1H103Z	CAP C .01UF-Z-50V	
C408	TCJ2VF1H103Z	CAP C .01UF-Z-50V	
C411	TCJ2VB1H822K	CAP C 8200PF-K-50V	
C412	ECQB1224KF3	CAP P .22UF-K-100V	
C413	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C414	TCJ2VB1H272K	CAP C 2700PF-K-50V	
C417	ECJ2VF1H104Z	CAP C .1UF-Z-50V	
C418	TCJ2VF1H223Z	CAP C .022UF-Z-50V	
C421	ECEA1CN220UB	CAP E 22UF-16V	
C458	TCJ2VF1H103Z	CAP C .01UF-Z-50V	
C461	ECA1HHG221B	CAP E 220UF-50V	
C501	ECA1EM101B	CAP E 100UF-25V	
C502	ECQV1H105JL3	CAP P 1.0UF-J-50V	
C503	ECKR2H102KB5	CAP C 1000PF-K-500V	
C509	ECWF2474JSR	CAP P .47UF-J-200V	
C510	TCJ2VC1H221J	CAP C 220PF-J-50V	
C511	ECWH20222JVY	CAP P 2200PF-J-2KV	⚠
C512	ECWH20102JVY	CAP P 1000PF-J-2KV	⚠
C513	ECQF4103JZH	CAP P .01UF-J-400V	⚠
C514	ECWH20222JVY	CAP P 2200PF-J-2KV	⚠
C518	ECKW3D221JBP	CAP C 220PF-J-2KVDC	⚠
C519	ECKW3D221JBP	CAP C 220PF-J-2KVDC	⚠

Ref. No.	Part No.	Part Name & Description	Remarks
C520	ECQB1H103JF3	CAP P .01UF-J-50V	⚠
C522	ECWH20182JVY	CAP P 1800PF-J-2KV	⚠
C523	ECWH20182JVY	CAP P 1800PF-J-2KV	⚠
C524	ECQB1224JF3	CAP P .22UF-J-100V	
C525	ECEA1HN220UB	CAP E 22UF-50V	
C526	ECA2EM101E	CAP E 100UF-250V	
C527	ECKR2H102KB5	CAP C 1000PF-K-500V	
C528	ECA1HM470B	CAP E 47UF-50V	⚠
C531	ECA160V33UE	CAP E 33UF-160V	
C533	ECKR2H101KB5	CAP C 100UF-K-500V	
C535	ECA1EM471E	CAP E 470UF-25V	
C601	EEUFC1C331B	CAP E 330UF-16V	
C602	TCJ2VF1H103Z	CAP C .01UF-Z-50V	
C701	ECA1CM101B	CAP E 100UF-16V	
C702	ECKW3D271KBP	CAP C 270PF-K-2KV	
C703	ECQM2104KZW	CAP P .1UF-K-200V	
C704	ECKR2H391KB5	CAP C 390PF-K-500V	
C707	TCJ2VF1H103Z	CAP C .01UF-Z-50V	
C708	ECQE1685KFB	CAP P 6.8UF-K-100V	
C801	ECQU2A104MNB	CAP P .10UF-M-250VAC	⚠
C802	ECQU2A823MNB	CAP P .082UF-M-250V	⚠
C803	ECKCNA222ME7	CAP C 2200PF-M-125V	⚠
C804	ECKCNA222ME7	CAP C 2200PF-M-125V	⚠
C805	ECKW2H472PU7	CAP C 4700PF-P-500V	⚠
C806	ECKW2H472PU7	CAP C 4700PF-P-500V	⚠
C807	ECKW2H472PU7	CAP C 4700PF-P-500V	⚠
C808	ECA1EM101B	CAP E 100UF-25V	
C809	TCJ2VB1E223K	CAP C .022UF-K-25V	
C810	EETED2D102C	CAP E 1000PF-200V	⚠
C812	ECA1EHG471B	CAP E 470UF-25V	
C814	ECKW3D102KBP	CAP C 1000PF-K-2KV	
C815	ECQB1H152JF3	CAP P 1500PF-J-50V	
C816	ECKW3D821KBP	CAP C 820PF-K-2KV	
C817	ECKW3D102KBP	CAP C 1000PF-K-2KV	
C819	ECQB1H102JF3	CAP P 1000PF-J-50V	
C820	ECQV1H334JL3	CAP P .33UF-J-50V	
C821	ECQB1H272KF3	CAP P 2700PF-K-50V	
C822	ECA1HM220B	CAP E 22UF-50V	
C823	TCJ2VC1H151J	CAP C 150PF-J-50V	
C824	EEUFC1V151B	CAP E 150UF-35V	
C825	ECKCNA102MBB	CAP C .001UF-M-125V	⚠
C826	ECJ2VF1H104Z	CAP C .1UF-Z-50V	
C830	EETHC2C471B	CAP E 470PF-160V	⚠
C831	ECKW3D821KBP	CAP C 820PF-K-2KV	
C832	TCJ2VF1H103Z	CAP C .01UF-Z-50V	
C834	EEUFC1V222E	CAP E 2200UF-35V	
C836	ECKR3A331KBP	CAP C 330PF-K-1KVDC	
C837	ECA1EM472E	CAP E 4700UF-25V	
C839	ECKR3A331KBP	CAP C 330PF-K-1KVDC	
C841	ECA1EM472E	CAP E 4700UF-25V	
C842	ECKR3A331KBP	CAP C 330PF-K-1KVDC	
C843	ECA1VM222E	CAP E 2200UF-35V	
C844	ECKR3A331KBP	CAP C 330PF-K-1KVDC	
C845	ECA1VM222E	CAP E 2200UF-35V	
C846	ECKR3A331KBP	CAP C 330PF-K-1KVDC	
C848	ECA1CM101B	CAP E 100UF-16V	
C849	ECKR1H223ZF5	CAP C .022UF-Z-50V	
C851	ECQV1H104JL3	CAP P .10UF-J-50V	
C852	ECA1EM101B	CAP E 100UF-25V	
C854	ECA1CM101B	CAP E 100UF-16V	
C855	ECJ2VF1H104Z	CAP C .1UF-Z-50V	
C860	EEUFC1V561E	CAP E 560UF-35V	
C861	ECJ3VF1H224Z	CAP C .22UF-Z-50V	
C863	EEUFC1A102B	CAP E 1000UF-10V	
C863	EEUFC1C471LB	CAP E 470UF-16V	
C864	ECJ2VB1H152K	CAP C .0015UF-K-50V	
C865	ECA0JM102B	CAP E 1000UF-6.3V	
C865	ECA1CM221B	CAP E 10UF-16V	
C866	ECJ2VB1H152K	CAP C .0015UF-K-50V	
C874	ECA1CM101B	CAP E 100UF-16V	
C876	ECJ3VF1H224Z	CAP C .22UF-Z-50V	

Ref. No.	Part No.	Part Name & Description	Remarks
C877	ECA1CM221B	CAP E 10UF-16V	
C878	EEUFC1V561E	CAP E 560UF-35V	
C879	EEUFC1C471LB	CAP E 470UF-16V	
C880	ECJ2VB1H152K	CAP C .0015UF-K-50V	
C881	ECJ2VB1H152K	CAP C .0015UF-K-50V	
C882	ECA1CM221B	CAP E 10UF-16V	
C883	ECJ2VB1H152K	CAP C .0015UF-K-50V	
C885	ECJ2VB1H152K	CAP C .0015UF-K-50V	
C886	ECJ2VB1H152K	CAP C .0015UF-K-50V	
C887	EEUFC1V561E	CAP E 560UF-35V	
C888	EEUFC1V561E	CAP E 560UF-35V	
C889	ECJ2YF1E474Z	CAP C .47UF-Z-25V	
C890	TCJ2VF1H103Z	CAP C .01UF-Z-50V	
C891	EEUFC1C471LB	CAP E 470UF-16V	
C892	ECA1CM221B	CAP E 10UF-16V	
C893	EEUFC1C471LB	CAP E 470UF-16V	
C895	ECJ3VF1H224Z	CAP C .22UF-Z-50V	
C896	ECJ3VF1H224Z	CAP C .22UF-Z-50V	
C897	ECJ2VB1H152K	CAP C .0015UF-K-50V	
C902	ECQM2103KZB	CAP P .01UF-K-200V	
C903	ECKR1H103ZF5	CAP C .01UF-Z-50V	
C904	ECKR1H103ZF5	CAP C .01UF-Z-50V	
C906	ECQM2103KZB	CAP P .01UF-K-200V	
C907	F2A2C100A023	CAP E 10UF-160V	
C908	F2A1C101A159	CAP E 100UF-16V	
C909	F2A1C101A159	CAP E 100UF-16V	
C910	F2A2C100A023	CAP E 10UF-160V	
C912	F2A1H220A162	CAP E 22UF-50V	
C931	ECA1HM101B	CAP E 100UF-50V	
C932	ECJ2VB1H103K	CAP C .01UF-K-50V	
C933	ECA1CM101B	CAP E 100UF-16V	
C935	ECJ2VB1H102K	CAP C .001UF-K-50V	
C936	ECJ2VF1H103Z	CAP C .01UF-Z-50V	
C939	ECKR1H103ZF5	CAP C .01UF-Z-50V	
C940	ECQM2103KZB	CAP P .01UF-K-200V	
C941	ECKR1H103ZF5	CAP C .01UF-Z-50V	
C942	ECQM2103KZB	CAP P .01UF-K-200V	
C943	F2A2C100A023	CAP E 10UF-160V	
C944	F2A1C101A159	CAP E 100UF-16V	
C945	F2A1C101A159	CAP E 100UF-16V	
C947	F2A2C100A023	CAP E 10UF-160V	
C962	ECKR1H103ZF5	CAP C .01UF-Z-50V	
C963	ECQM2103KZB	CAP P .01UF-K-200V	
C965	ECKR1H103ZF5	CAP C .01UF-Z-50V	
C966	ECQM2103KZB	CAP P .01UF-K-200V	
C967	F2A2C100A023	CAP E 10UF-160V	
C968	F2A1C101A159	CAP E 100UF-16V	
C969	F2A1C101A159	CAP E 100UF-16V	
C970	F2A2C100A023	CAP E 10UF-160V	
C972	F2A1H220A162	CAP E 22UF-50V	
C1502	ECQE6104KFB	CAP P 100UF-K-100V	
C1503	ECQE6104KFB	CAP P 100UF-K-100V	
C1504	ECJ2VB1C104K	CAP C .1UF-K-16V	
C1505	ECA1CM101B	CAP E 100UF-16V	
C1506	TCJ2VF1H103Z	CAP C .01UF-Z-50V	
C1507	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C1508	ECA1CM101B	CAP E 100UF-16V	
C1509	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C1510	TCJ2VF1H103Z	CAP C .01UF-Z-50V	
C1511	TCJ2VC1H471J	CAP C 470PF-J-50V	
C1513	ECEA1EN101UB	CAP E 100UF-25V	
C1514	ECA1CM101B	CAP E 100UF-16V	
C2213	ECJ2VF1H104Z	CAP C .1UF-Z-50V	
C2214	ECJ2VF1H104Z	CAP C .1UF-Z-50V	
C2220	ECJ2VB1C104K	CAP C .1UF-K-16V	
C2221	ECJ2VB1C104K	CAP C .1UF-K-16V	
C2222	ECJ2VB1C104K	CAP C .1UF-K-16V	
C2223	ECJ2VB1C104K	CAP C .1UF-K-16V	
C2224	ECJ2VB1C104K	CAP C .1UF-K-16V	
C2225	ECJ2VB1C104K	CAP C .1UF-K-16V	
C2226	ECJ2VB1C104K	CAP C .1UF-K-16V	
C2227	ECJ2VB1C104K	CAP C .1UF-K-16V	
C2228	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	

Ref. No.	Part No.	Part Name & Description	Remarks
C2229	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C2230	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C2234	ECA1CM101B	CAP E 100UF-16V	
C2236	ECA0JM222B	CAP E 2200UF-6.3V	
C2236	ECA1CM101B	CAP E 100UF-16V	
C2238	ECA1CM101B	CAP E 100UF-16V	
C2239	ECA1CM101B	CAP E 100UF-16V	
C2303	ECA1VM101B	CAP E 100UF-35V	
C2304	ECJ2VF1H103Z	CAP C .01UF-Z-50V	
C2320	ECJ2VB1C104K	CAP C .1UF-K-16V	
C2321	ECJ2VB1C104K	CAP C .1UF-K-16V	
C2324	ECA1CM101B	CAP E 100UF-16V	
C2326	ECA0JM332B	CAP E 3300PF-6.3V	
C2326	ECA1CM101B	CAP E 100UF-16V	
C2330	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C2332	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C2333	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C2334	ECJ2VF1H103Z	CAP C .01UF-Z-50V	
C2335	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C2337	ECA50YT2R2KB	CAP E 2.2UF-50V	
C2338	ECA50YT2R2KB	CAP E 2.2UF-50V	
C2342	ECJ2VB1H333K	CAP C .033UF-K-50V	
C2344	ECQB1H224JF3	CAP P .22UF-J-50V	
C2345	EEUFC1E222E	CAP E 2200UF-25V	
C2346	ECJ2VB1H561K	CAP C 560PF-K-50V	
C2347	ECJ3VB1H104K	CAP C .1UF-K-50V	
C2351	F1J1C225A083	CAP C 2.2UF-Z-16V	
C2352	EEUFC1E222E	CAP E 2200UF-25V	
C2354	ECJ2VB1H471K	CAP C 470PF-K-50V	
C2355	ECJ2VC1H270J	CAP C 27PF-J-50V	
C2356	ECJ2VB1H471K	CAP C 470PF-K-50V	
C2357	ECJ2VB1H331K	CAP C 330PF-K-50V	
C2358	ECJ3VB1H104K	CAP C .1UF-K-50V	
C2359	ECJ2VB1H331K	CAP C 330PF-K-50V	
C2360	ECJ3VB1H104K	CAP C .1UF-K-50V	
C2361	ECJ2VB1H471K	CAP C 470PF-K-50V	
C2362	ECJ2VB1H471K	CAP C 470PF-K-50V	
C2363	ECJ2VB1H682K	CAP C .0068UF-K-50V	
C2364	ECJ3VB1H104K	CAP C .1UF-K-50V	
C2365	ECJ3VB1H104K	CAP C .1UF-K-50V	
C2367	ECQB1H224JF3	CAP P .22UF-J-50V	
C2368	ECJ2VB1H333K	CAP C .033UF-K-50V	
C2369	ECJ2VB1H561K	CAP C 560PF-K-50V	
C2370	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C2371	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C2373	ECJ2VB1H682K	CAP C .0068UF-K-50V	
C2374	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C2375	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C2389	ECJ2VF1H103Z	CAP C .01UF-Z-50V	
C2390	ECJ2VF1H103Z	CAP C .01UF-Z-50V	
C2451	ECEA1HN4R7UB	CAP E 4.7UF-50V	
C2452	ECEA1HN4R7UB	CAP E 4.7UF-50V	
C2453	ECJ2VB1H332K	CAP C .0033UF-K-50V	
C2454	ECJ2VB1H332K	CAP C .0033UF-K-50V	
C2455	ECJ2VB1H333K	CAP C .033UF-K-50V	
C2456	ECJ2VB1H333K	CAP C .033UF-K-50V	
C2457	ECQB1H222JF3	CAP P 2200PF-J-50V	
C2458	ECQB1H222JF3	CAP P 2200PF-J-50V	
C2459	ECJ2VB1C104K	CAP C .1UF-K-16V	
C2459	ECJ2VB1C224K	CAP C .22UF-K-16V	
C2460	ECJ2VB1C104K	CAP C .1UF-K-16V	
C2460	ECJ2VB1C224K	CAP C .22UF-K-16V	
C2461	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C2462	ECJ2VB1C104K	CAP C .1UF-K-16V	
C2463	ECJ2VB1C104K	CAP C .1UF-K-16V	
C2464	ECA1HM4R7B	CAP E 4.7UF-50V	
C2465	ECA1HM4R7B	CAP E 4.7UF-50V	
C2466	ECA1HM4R7B	CAP E 4.7UF-50V	
C2467	ECA1HM4R7B	CAP E 4.7UF-50V	
C2468	ECA1HM4R7B	CAP E 4.7UF-50V	
C2474	ECA1CM101B	CAP E 100UF-16V	
C2475	ECJ2VB1H103K	CAP C .01UF-K-50V	
C2507	ECA1CM101B	CAP E 100UF-16V	

Ref. No.	Part No.	Part Name & Description	Remarks
C2587	ECJ2VF1H103Z	CAP C .01UF-Z-50V	
C2588	ECA1CM102B	CAP E 1000UF-16V	
C2589	ECJ2VF1H104Z	CAP C .1UF-Z-50V	
C2599	ECJ2VB1C104K	CAP C .1UF-K-16V	
C2803	ECCR1H470J5	CAP DISC 47-5-50V	
C2804	ECCR1H102J5	CAP C 1000PF-50V	
C2805	ECKW3D471KBP	CAP C 470PF-K-2KVDC	
C2806	ECES2DG101DG	CAP E 100UF-200V	⚠
C2807	ECA1EHG221B	CAP E 220UF-25V	
C2808	ECQE2333JFB	CAP P .033UF-J-200V	
C2809	ECKCNA471MB7	CAP C 470PF	⚠
C2811	ECKR2H471KB5	CAP C 470PF-K-500V	
C2812	ECA1HHG010B	CAP E 1UF-50V	
C2813	ECKR2H471KB5	CAP C 470PF-K-500V	
C2814	EEUFC1C332E	CAP E 3300PF-E-16V	
C2815	ECA1HHG100B	CAP E 10UF/50V	
C2816	EEUFC1C332E	CAP E 3300PF-E-16V	
C2850	ECJ2VF1H104Z	CAP C .1UF-Z-50V	
C2851	ECA1CM331B	CAP E 330UF-16V	
C2852	ECA1CM331B	CAP E 330UF-16V	
C2853	ECJ2VF1H104Z	CAP C .1UF-Z-50V	
C3003	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C3004	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C3005	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C3006	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C3007	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C3008	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C3009	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C3010	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C3020	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C3021	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C3022	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C3023	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C3024	ECA1CM471E	CAP E 470UF-16V	
C3031	ECEA1CKA101B	CAP E 100UF-16V	
C3032	ECEA1CKA101B	CAP E 100UF-16V	
C3033	ECA1CM471E	CAP E 470UF-16V	
C3034	ECA1CM471E	CAP E 470UF-16V	
C7001	ECJ3YF1E225Z	CAP C 22MF-Z-25V	
C7002	ECJ3YF1E225Z	CAP C 22MF-Z-25V	
C7004	ECA1EHG221B	CAP E 220UF-25V	
C7006	ECA1EHG221B	CAP E 220UF-25V	
C7015	TCJ2VF1H103Z	CAP C .01UF-Z-50V	
C7016	TCJ2VF1H103Z	CAP C .01UF-Z-50V	
C7017	TCJ2VF1H103Z	CAP C .01UF-Z-50V	
C7018	TCJ2VF1H103Z	CAP C .01UF-Z-50V	
C7032	ECJ2VF1H104Z	CAP C .1UF-Z-50V	
C7033	ECJ2VF1H104Z	CAP C .1UF-Z-50V	
C7034	ECJ2VF1H104Z	CAP C .1UF-Z-50V	
C7035	ECJ2VF1H104Z	CAP C .1UF-Z-50V	
C7060	ECA1CHG101B	CAP E 100UF-16V	
C7061	ECA1CHG101B	CAP E 100UF-16V	
C7150	ECA1VM470B	CAP E 47UF-35V	
C7165	ECA1VM470B	CAP E 47UF-35V	
DIODES			
D002	MAZ31500ML	DIODE ZENER	
D003	MAZ41500MF	DIODE ZENER	
D004	MAZ31500ML	DIODE ZENER	
D005	MAZ41500MF	DIODE ZENER	
D081	LN21RCPHL	DIODE	
D082	MAZ40560MF	DIODE ZENER	
D083	MAZ40560MF	DIODE ZENER	
D301	MA2C16700E	DIODE	
D302	MAZ41000LF	DIODE ZENER	
D303	TVSRM1V1	DIODE	
D304	D1NL40V70	DIODE	
D306	MA2C165001VT	DIODE	
D307	MA2C165001VT	DIODE	
D312	MA2C18800E	DIODE	
D313	MA2C18800E	DIODE	
D314	MA2C18800E	DIODE	
D315	MA2C18800E	DIODE	
D331	D1NL40V70	DIODE	

Ref. No.	Part No.	Part Name & Description	Remarks
D334	MA2C165001VT	DIODE	
D335	MA2C165001VT	DIODE	
D339	MA2C18800E	DIODE	
D340	MA2C18800E	DIODE	
D341	MA2C18800E	DIODE	
D342	MA2C18800E	DIODE	
D361	D1NL40V70	DIODE	
D363	MA2C165001VT	DIODE	
D364	MA2C165001VT	DIODE	
D369	MA2C18800E	DIODE	
D370	MA2C18800E	DIODE	
D371	MA2C18800E	DIODE	
D372	MA2C18800E	DIODE	
D407	MA3X152K0L	DIODE	
D409	MA3X152K0L	DIODE	
D410	MA3X152K0L	DIODE	
D411	MA3X152K0L	DIODE	
D451	B0EAKC000003	DIODE RECTIFIER	
D452	B0EAKC000003	DIODE RECTIFIER	
D453	B0EAKC000003	DIODE RECTIFIER	
D454	B0EAKC000003	DIODE RECTIFIER	
D455	B0EAKC000003	DIODE RECTIFIER	
D456	B0EAKC000003	DIODE RECTIFIER	
D458	B0EAKL000008	DIODE RECTIFIER	
D465	MAZ40390MF	DIODE ZENER	
D466	MA3X152K0L	DIODE	
D501	D1NL40V70	DIODE	
D502	MAZ31500ML	DIODE ZENER	
D503	B0HBRV000001	DIODE	
D504	MAZ42700MF	DIODE ZENER	
D509	MA2C165001VT	DIODE	
D510	MAZ40680LF	DIODE ZENER	
D511	B0HAHP000014	DIODE	
D512	D1NL40V70	DIODE	⚠
D513	MA2C165001VT	DIODE	
D515	D1NL40V70	DIODE	
D516	EU2YXV0	DIODE	
D519	AU02ZV0	DIODE	
D520	MA3X152K0L	DIODE	
D634	MA2C165001VT	DIODE	
D650	MAZ41100MF	DIODE ZENER	
D651	MAZ41100MF	DIODE ZENER	
D656	MAZ41100MF	DIODE ZENER	
D657	MAZ41100MF	DIODE ZENER	
D659	MAZ41100MF	DIODE ZENER	
D660	MAZ41100MF	DIODE ZENER	
D662	MAZ41100MF	DIODE ZENER	
D663	MAZ41100MF	DIODE ZENER	
D702	D1NL40V70	DIODE	
D801	D3SB80-4101	DIODE	⚠
D802	ERZC10VK361G	VARISTOR	⚠
D815	MA2C165001VT	DIODE	
D816	MA2C70000F	DIODE	
D817	AU01ZV0	DIODE	
D818	MAZ32700LL	DIODE ZENER	
D819	B0BA01000046	DIODE ZENER	⚠
D822	B0AAGM000006	DIODE SWITCHING	
D825	SF5L60U-4115	DIODE GERMANIUM	⚠
D827	SF5LC30-4115	DIODE GERMANIUM	
D828	SF5LC30-4115	DIODE GERMANIUM	
D829	SF5LC30-4115	DIODE GERMANIUM	
D830	RL4ZLF-J6	DIODE	
D831	RL4ZLF-J6	DIODE	
D835	B0JAME000052	DIODE	
D837	MA3X152K0L	DIODE	
D870	B0JCME000025	DIODE	
D871	B0JCME000025	DIODE	
D876	B0JCME000025	DIODE	
D885	MA2062-BTP	DIODE	
D886	MA2120-ATP	DIODE	
D887	MA2062-BTP	DIODE	
D890	B0JCME000025	DIODE	
D891	MA2062-BTP	DIODE	

Ref. No.	Part No.	Part Name & Description	Remarks
D895	MA2C165001VT	DIODE	
D896	MA3X152K0L	DIODE	
D902	MA2C18800E	DIODE	
D933	MA2C18800E	DIODE	
D953	B0ZAZ0000047	DIODE	
D962	MA2C18800E	DIODE	
D973	B0ZAZ0000047	DIODE	
D983	B0ZAZ0000047	DIODE	
D1502	B0HACW000001	DIODE	
D1503	MAZ30300LL	DIODE ZENER	⚠
D1504	B0HACW000001	DIODE	
D1505	MA2C0290BF	DIODE	
D1506	MAZ30510HL	DIODE	⚠
D1507	MAZ30300LL	DIODE ZENER	
D1510	MAZ30330LL	DIODE ZENER	
D1599	MA3X152K0L	DIODE	
D2321	MA3X152K0L	DIODE	
D2323	MA3X152K0L	DIODE	
D2324	MA3X152K0L	DIODE	
D2802	B0EBKT000003	DIODE	⚠
D2806	MAZ41100MF	DIODE ZENER	
D2809	MA2C165001VT	DIODE	
D2810	EG01AF7	DIODE	
D2811	AG01ZV0	DIODE	
D2813	B0HBSM000034	DIODE	
D2814	AG01ZV0	DIODE	
D2815	MA3X152K0L	DIODE	
D2816	MAZ31500ML	DIODE ZENER	
D3001	MAZ31100ML	DIODE ZENER	
D3002	MAZ31100ML	DIODE ZENER	
D3003	MAZ31100ML	DIODE ZENER	
D3004	MAZ31100ML	DIODE ZENER	
D3005	MAZ31100ML	DIODE ZENER	
D3006	MAZ31100ML	DIODE ZENER	
D3007	MAZ31100ML	DIODE ZENER	
D3008	MAZ31100ML	DIODE ZENER	
D3009	MAZ31100ML	DIODE ZENER	
D3010	MAZ31100ML	DIODE ZENER	
D3011	MAZ31100ML	DIODE ZENER	
D3012	MAZ31100ML	DIODE ZENER	
D3013	MAZ31100ML	DIODE ZENER	
D3014	MAZ31100ML	DIODE ZENER	
D3015	MAZ31100ML	DIODE ZENER	
D3016	MAZ31100ML	DIODE ZENER	
D3017	MAZ31100ML	DIODE ZENER	
D3018	MAZ31100ML	DIODE ZENER	
D3019	MAZ31100ML	DIODE ZENER	
D3020	MAZ31100ML	DIODE ZENER	
D3030	MAZ31100ML	DIODE ZENER	
D3031	MAZ31100ML	DIODE ZENER	
D3035	MAZ31100ML	DIODE ZENER	
D3036	MAZ31100ML	DIODE ZENER	
D3037	MAZ30330LL	DIODE ZENER	
D7060	MA3X152K0L	DIODE	
FUSES			
F801	K5D632AD0002	FUSE 6.3A/125V	⚠
INTEGRATED CIRCUITS			
IC451	C1AA00000521	VERTICAL OUTPUT	
IC701	AN6914S	EW, HHS ADJ. OP-AMP	
IC801	AN8029	POWER SUPPLY	⚠
IC802	C0EAS0000025	MAIN REGULATOR	⚠
IC805	AN78M12LB	12V REGULATOR	
IC811	0N3171RLF	OPTO COUPLER	⚠
IC871	C0DAAZH00009	5V REGULATOR	
IC872	SI-8090J	9V REGULATOR	
IC873	C0DAAZH00009	2.5V REGULATOR	
IC874	C0DAAZH00009	5V REGULATOR	
IC880	AN78N12-LB	12V REGULATOR	
IC1101	TVR2AJ173S	MAIN EEPROM	
IC1112	TVR2AJ174S	CONVERGENCE EEPROM	
IC1501	AN6562S-E1	EHT ADJ. OP-AMP	
IC2302	C1AA00000645	AUDIO AMPLIFIER	
IC2451	NJW1137MPTE1	BBE VIVA PROCESSOR	

Ref. No.	Part No.	Part Name & Description	Remarks
IC2801	C0DACZH00003	20V REGULATOR (HOT)	⚠
IC2803	AN1431T-TA	SCR	
IC2804	0N3171RLF	OPTO COUPLER	⚠
IC2851	C0CAADH00003	7.7V REGULATOR	
IC7001	C5AA00000108	CONVERGENCE AMPLIFIER	
IC7002	C5AA00000108	CONVERGENCE AMPLIFIER	
COILS			
L002	ELJPA330KF	CHIP INDUCTOR 33UH	
L003	ELJPA100KF	CHIP INDUCTOR 10UH	
L006	ELJPA100KF	CHIP INDUCTOR 10UH	
L301	ELEBD101KA	COIL 100UH	
L302	ELESN100JA	COIL PEAKING 10UH	
L303	ELESN6R8JA	COIL PEAKING 6.8UH	
L304	ELESN4R7JA	RADIAL INDUCTOR	
L331	ELESN100JA	COIL PEAKING 10UH	
L332	ELESN6R8JA	COIL PEAKING 6.8UH	
L333	G0C560KA0021	COIL PEAKING 56UH	
L334	ELESN4R7KA	COIL PEAKING 4.7UH	
L335	ELEBD101KA	COIL 100UH	
L337	G0C560KA0021	COIL PEAKING 56UH	
L361	ELEBD101KA	COIL 100UH	
L362	ELESN100JA	COIL PEAKING 10UH	
L363	ELESN150JA	COIL PEAKING 15UH	
L364	ELESN4R7JA	RADIAL INDUCTOR	
L500	TALL08TR82	MASTER COIL	
L501	EXCELSA35T	FERRITE BEAD	
L510	EXCELDR25V	FERRITE BEAD	
L511	EXCELDR25V	FERRITE BEAD	
L515	EXCELDR25V	FERRITE BEAD	
L516	EXCELDR25V	FERRITE BEAD	
L555	ELH5L718	COIL	
L701	ELESN100KA	COIL PEAKING 10UH	
L702	EXCELSA35T	FERRITE BEAD	
L703	ELC18B152L	FILTER	
L704	ELC18B151G	FILTER	
L801	ELF18D650M	COIL	⚠
L802	ELF21N035A	LINE FILTER	⚠
L805	EXCELDR25V	FERRITE BEAD	
L806	EXCELDR25V	FERRITE BEAD	
L808	EXCELDR35V	FERRITE BEAD	
L810	EXCELDR25V	FERRITE BEAD	
L811	EXCELDR25V	FERRITE BEAD	
L815	EXCELSA39E	FERRITE BEAD	
L816	EXCELSA39E	FERRITE BEAD	
L817	TALL08T680KA	COIL	
L819	EXCELDR35V	FERRITE BEAD	
L820	EXCELDR35V	FERRITE BEAD	
L821	EXCELDR35V	FERRITE BEAD	
L825	TALL08T330KA	COIL	
L826	TALL08T330KA	COIL	
L827	TALL08T330KA	COIL	
L851	TALL08T470KA	COIL	
L852	G0ZZ00001909	INT CKT	
L853	TALL08T220KA	COIL	
L854	EXCELDR35V	FERRITE BEAD	
L876	G0ZZ00001909	INT CKT	
L879	G0ZZ00001909	INT CKT	
L880	G0ZZ00001909	INT CKT	
L885	TALL08T470KA	COIL	
L886	TALL08T220KA	COIL	
L887	TALL08T220KA	COIL	
L888	TALL08T680KA	COIL	
L889	TALL08T470KA	COIL	
L892	EXCELDR35V	FERRITE BEAD	
L893	EXCELDR35V	FERRITE BEAD	
L894	EXCELDR35V	FERRITE BEAD	
L895	TALL08T220KA	COIL	
L901	EXCELSA35T	FERRITE BEAD	
L902	EXCELSA35T	FERRITE BEAD	
L903	EXCELSA35T	FERRITE BEAD	
L931	TALL08T100KA	COIL	
L933	EXCELSA35T	FERRITE BEAD	
L934	EXCELSA35T	FERRITE BEAD	

Ref. No.	Part No.	Part Name & Description	Remarks
L935	EXCELSA35T	FERRITE BEAD	
L961	EXCELSA35T	FERRITE BEAD	
L962	EXCELSA35T	FERRITE BEAD	
L963	EXCELSA35T	FERRITE BEAD	
L1102	EXCELDR35V	FERRITE BEAD	
L1103	EXCELDR35V	FERRITE BEAD	
L2305	TALL08T330KA	COIL	
L2306	TALL08T330KA	COIL	
L2309	TALL08T100KA	COIL	
L2310	TALL08T100KA	COIL	
L2311	TALL08T100KA	COIL	
L2312	TALL08T100KA	COIL	
L2313	TALL08T100KA	COIL	
L2314	TALL08T100KA	COIL	
L2331	ELC12E390	COIL	
L2332	ELC12E390	COIL	
L2336	G0B800H00001	COIL	
L2337	G0B800H00001	COIL	
L2343	ELJPA100KF	CHIP INDUCTOR 10UH	
L2344	ELJPA100KF	CHIP INDUCTOR 10UH	
L2502	ELJPA100KF	CHIP INDUCTOR 10UH	
L2807	TALL08T330KA	COIL	
TRANSISTORS			
Q025	2SC3311ATA	TRANSISTOR	
Q026	2SD601ARTX	TRANSISTOR	
Q301	2SC1473ATA	TRANSISTOR	
Q302	2SC3526H	TRANSISTOR	
Q303	2SC1473ATA	TRANSISTOR	
Q331	2SC3526H	TRANSISTOR	
Q353	2SC3942LB	TRANSISTOR	
Q354	B1BAAN000025	TRANSISTOR	
Q355	B1BCAN000004	TRANSISTOR	
Q361	2SC3311ATA	TRANSISTOR	
Q362	2SC3311ATA	TRANSISTOR	
Q363	2SC3526H	TRANSISTOR	
Q364	2SA1309ATA	TRANSISTOR	
Q365	2SC3311ATA	TRANSISTOR	
Q366	2SC3311ATA	TRANSISTOR	
Q368	2SA1309ATA	TRANSISTOR	
Q373	2SC3942LB	TRANSISTOR	
Q374	B1BAAN000025	TRANSISTOR	
Q375	B1BCAN000004	TRANSISTOR	
Q393	2SC3942LB	TRANSISTOR	
Q394	B1BAAN000025	TRANSISTOR	
Q395	B1BCAN000004	TRANSISTOR	
Q406	2SD601ARTX	TRANSISTOR	
Q501	B1CEML000001	TRANSISTOR	
Q509	2SC1473QRTA	TRANSISTOR	
Q510	2SC1473QRTA	TRANSISTOR	
Q512	2SD601ARTX	TRANSISTOR	
Q513	2SD601ARTX	TRANSISTOR	
Q551	B1BAJW000001	TRANSISTOR	
Q606	2SD601ARTX	TRANSISTOR	
Q701	2SK2538000LB	TRANSISTOR	
Q801	2SK2917LB	TRANSISTOR	
Q802	2SD601ARTX	TRANSISTOR	
Q803	2SB709ARTX	TRANSISTOR	
Q854	2SA19610QAHW	TRANSISTOR	
Q901	2SB1321ARA	TRANSISTOR	
Q903	2SA720TA	TRANSISTOR	
Q904	2SD1992ARA	TRANSISTOR	
Q905	2SC1318ATA	TRANSISTOR	
Q906	2SC1318ATA	TRANSISTOR	
Q907	2SA720TA	TRANSISTOR	
Q931	2SC3311ATA	TRANSISTOR	
Q932	2SC3311ATA	TRANSISTOR	
Q933	2SC3311ATA	TRANSISTOR	
Q934	2SA720TA	TRANSISTOR	
Q935	2SC1318ATA	TRANSISTOR	
Q936	2SC1318ATA	TRANSISTOR	
Q937	2SA720TA	TRANSISTOR	
Q938	2SB1321ARA	TRANSISTOR	
Q941	2SD1992ARA	TRANSISTOR	
Q951	2SC3311ATA	TRANSISTOR	
Q952	2SC3311ATA	TRANSISTOR	
Q953	2SC3311ATA	TRANSISTOR	
Q955	2SA1248SRA	TRANSISTOR	
Q956	2SC3116SRA	TRANSISTOR	
Q957	2SA1248SRA	TRANSISTOR	
Q958	2SC3116SRA	TRANSISTOR	
Q959	2SA1248SRA	TRANSISTOR	
Q960	2SC3116SRA	TRANSISTOR	
Q961	2SB1321ARA	TRANSISTOR	
Q964	2SD1992ARA	TRANSISTOR	
Q965	2SA720TA	TRANSISTOR	
Q966	2SC1318ATA	TRANSISTOR	
Q967	2SC1318ATA	TRANSISTOR	
Q968	2SA720TA	TRANSISTOR	
Q1503	2SA1309ATA	TRANSISTOR	
Q1504	B1BAAV000003	TRANSISTOR	
Q1505	2SC3311ATA	TRANSISTOR	
Q2301	2SB709ARTX	TRANSISTOR	
Q2302	2SB709ARTX	TRANSISTOR	
Q2304	2SD601ARTX	TRANSISTOR	
Q2306	UN2215TX	TRANSISTOR	
Q2307	2SB709ARTX	TRANSISTOR	
Q2451	2SD601ARTX	TRANSISTOR	
Q2452	2SD601ARTX	TRANSISTOR	
Q2501	2SD601ARTX	TRANSISTOR	
Q2502	2SD601ARTX	TRANSISTOR	
Q2503	2SD601ARTX	TRANSISTOR	
Q2504	2SB709ARTX	TRANSISTOR	
Q2505	2SB709ARTX	TRANSISTOR	
Q2506	2SB709ARTX	TRANSISTOR	
Q2507	2SB709ARTX	TRANSISTOR	
Q2508	2SB709ARTX	TRANSISTOR	
Q2509	2SB709ARTX	TRANSISTOR	
Q2510	2SB709ARTX	TRANSISTOR	
Q2516	2SC3311ATA	TRANSISTOR	
Q2517	2SA1309ATA	TRANSISTOR	
Q2522	2SC3311ATA	TRANSISTOR	
Q2525	2SC3311ATA	TRANSISTOR	
Q2528	2SC3311ATA	TRANSISTOR	
Q2801	B1DGGD000001	TRANSISTOR	
Q2802	2SD601ARTX	TRANSISTOR	
Q2803	2SD601ARTX	TRANSISTOR	
Q3001	2SB710ATX	TRANSISTOR	
Q3002	2SD601ARTX	TRANSISTOR	
Q7006	2SD601ARTX	TRANSISTOR	
Q7007	2SD601ARTX	TRANSISTOR	
Q7060	2SB709ARTX	TRANSISTOR	
Q7061	2SD601ARTX	TRANSISTOR	
RELAYS			
RL801	K6B1ADA00010	RELAY	⚠
RL802	K6B1ADA00010	RELAY	⚠
RESISTORS			
R001	ERJ6GEYJ221V	RES M 220-J-1/10W	
R002	ERJ6GEYJ221V	RES M 220-J-1/10W	
R015	ERG1SJ273P	RES M 27K-J-1W	
R023	ERDS2TJ471T	RES C 470-J-1/4W	
R024	ERDS2TJ153T	RES C 15K-J-1/4W	
R025	ERDS2TJ473T	RES C 47K-J-1/4W	
R027	ERJ6GEYJ220V	RES M 22-J-1/10W	
R072	ERDS2TJ101T	RES C 100-J-1/4W	
R073	ERDS2TJ471T	RES C 470-J-1/4W	
R080	ERDS2TJ222T	RES C 2.2K-J-1/4W	
R081	ERDS2TJ222T	RES C 2.2K-J-1/4W	
R082	ERDS2TJ332T	RES C 3.3K-J-1/4W	
R083	ERDS2TJ512T	RES C 5.1K-J-1/4W	
R084	ERDS2TJ912T	RES C 9.1K-J-1/4W	
R086	ERDS2TJ681T	RES C 680-J-1/4W	
R087	ERDS2TJ331T	RES C 330-J-1/4W	
R088	ERDS2TJ123T	RES C 12K-J-1/4W	
R301	ERDS1FJ394P	RES C 390K-J-1/2W	
R302	ERDS2TJ151T	RES C 150-J-1/4W	
R303	EROS2THF2200	RES M 220-f-1/4w	

Ref. No.	Part No.	Part Name & Description	Remarks
R304	ERDS2TJ334T	RES C 330K-J-1/4W	
R305	EROS2THF2200	RES M 220-f-1/4w	
R306	EROS2THF4700	RES M 470-f-1/4w	
R307	ERDS2TJ220T	RES C 22-J-1/4W	
R308	ERDS2TJ334T	RES C 330K-J-1/4W	
R310	ERDS2TJ183T	RES C 18K-J-1/4W	
R311	ERDS2TJ470T	RES C 47-J-1/4W	
R312	ERG7ZJ272	RES M 2.7K-J-7W	
R313	ERDS1FJ103T	RES C 10K-J-1/2w	
R315	ERDS2TJ563T	RES C 56K-J-1/4W	
R316	ERDS2TJ821T	RES C 820-J-1/4W	
R319	ERG12SJ101P	RES M 100-J-1W	
R320	ERDS1FJ330P	RES C 33-J-1/2W	
R321	ERDS1FJ330P	RES C 33-J-1/2W	
R322	ERG12SJ101P	RES M 100-J-1W	
R325	ERDS2TJ473T	RES C 47K-J-1/4W	
R327	ERC12GK331D	RES C 330-K-1/2W	
R328	ERDS1TJ104T	RES C 100K-J-1/2W	
R331	EROS2THF2200	RES M 220-f-1/4w	
R332	ERDS2TJ151T	RES C 150-J-1/4W	
R333	EROS2THF2200	RES M 220-f-1/4w	
R334	ERDS2TJ220T	RES C 22-J-1/4W	
R335	EROS2THF4700	RES M 470-f-1/4w	
R337	ERDS1FJ103T	RES C 10K-J-1/2w	
R345	ERDS2TJ470T	RES C 47-J-1/4W	
R347	ERG7ZJ272	RES M 2.7K-J-7W	
R348	ERDS2TJ563T	RES C 56K-J-1/4W	
R349	ERDS2TJ821T	RES C 820-J-1/4W	
R350	ERG12SJ101P	RES M 100-J-1W	
R351	ERDS1FJ330P	RES C 33-J-1/2W	
R352	ERDS1FJ330P	RES C 33-J-1/2W	
R353	ERG12SJ101P	RES M 100-J-1W	
R354	ERDS2TJ473T	RES C 47K-J-1/4W	
R356	ERC12GK331D	RES C 330-K-1/2W	
R357	ERDS1TJ104T	RES C 100K-J-1/2W	
R361	EROS2THF1302	RES M 13k-f-1/4w	
R362	EROS2THF1002	RES M 10K-F-1/4W	
R363	ERDS2TJ220T	RES C 22-J-1/4W	
R364	ERDS2TJ102T	RES C 1K-J-1/4W	
R365	ERDS2TJ221T	RES C 220-J-1/4W	
R366	ERDS2TJ151T	RES C 150-J-1/4W	
R367	EROS2THF2200	RES M 220-f-1/4w	
R368	EROS2THF2200	RES M 220-f-1/4w	
R369	ERDS2TJ472T	RES C 4.7K-J-1/4W	
R371	EROS2THF4700	RES M 470-f-1/4w	
R372	EROS2THF82R0	RES M 82.0-f-1/4w	
R374	ERDS1FJ103T	RES C 10K-J-1/2w	
R375	ERDS2TJ470T	RES C 47-J-1/4W	
R376	ERG7ZJ272	RES M 2.7K-J-7W	
R379	ERDS2TJ563T	RES C 56K-J-1/4W	
R380	ERDS2TJ821T	RES C 820-J-1/4W	
R383	ERG12SJ101P	RES M 100-J-1W	
R384	ERDS1FJ330P	RES C 33-J-1/2W	
R385	ERDS1FJ330P	RES C 33-J-1/2W	
R386	ERG12SJ101P	RES M 100-J-1W	
R389	ERDS2TJ473T	RES C 47K-J-1/4W	
R390	ERC12GK331D	RES C 330-K-1/2W	
R391	ERDS1TJ104T	RES C 100K-J-1/2W	
R392	EROS2THF8201	RES M 8.2K-F-1/4W	
R393	EROS2THF8201	RES M 8.2K-F-1/4W	
R394	ERDS2TJ102T	RES C 1K-J-1/4W	
R395	ERDS2TJ221T	RES C 220-J-1/4W	
R396	ERDS2TJ472T	RES C 4.7K-J-1/4W	
R397	EROS2THF1201	RES M 1.2k-f-1/4w	
R398	EROS2THF3300	RES M 330-f-1/4w	
R408	ERJ6GEYJ272V	RES M 2.7K-J-1/10W	
R409	ERDS2TJ563T	RES C 56K-J-1/4W	
R410	ERJ6GEYJ224V	RES M 220K-J-1/10W	
R411	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R412	ERJ6GEYJ682V	RES M 6.8K-J-1/10W	
R415	ERG3FJ331H	RES M 330-J-3W	
R422	ERJ6ENF1800V	RES M 180-F-1/10W	
R423	ERJ6ENF5601V	RES M 5.6K-F-1/10W	

Ref. No.	Part No.	Part Name & Description	Remarks
R425	ERDS1FJ1R0T	RES C 1.0-J-1/2W	
R426	ERJ6ENF1502V	RES M 15K-F-1/10W	
R428	ERJ6ENF1002V	RES M 10K-F-1/10W	
R434	ERX12SJ1R8V	RES M 1.8-J-1/2W	
R435	ERX12SJ1R8V	RES M 1.8-J-1/2W	
R464	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R465	ERJ6GEYJ392V	RES M 3.9K-J-1/10W	
R466	ERJ6GEYJ562V	RES M 5.6K-J-1/10W	
R470	ERDS2TJ331T	RES C 330-J-1/4W	
R471	ERDS2TJ331T	RES C 330-J-1/4W	
R472	ERDS2TJ331T	RES C 330-J-1/4W	
R501	ERJ6GEYJ104V	RES M 100K-J-1/10W	
R502	ERJ6GEYJ680V	RES M 68-J-1/10W	
R503	ERG2FJ180H	RES M 18-J-2W	
R504	ERG3FJ271H	RES M 270-J-3W	
R505	ERG1SJ120P	RES M 12-J-1W	
R506	ERX1SJR47P	RES M .47-J-1W	
R512	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R513	ERDS2TJ471T	RES C 470-J-1/4W	
R514	EROS2THF5602	RES M 56K-F-1/4W	
R515	EROS2THF4752	RES M 47.5K-F-1/4W	
R516	ERJ6GEYJ101V	RES M 100-J-1/10W	
R517	ERDS2TJ103T	RES C 10K-J-1/4W	
R518	ERX12SJR22V	RES M .22-J-1/2W	
R519	ERQ12HKR22P	RES F .22-K-1/2W	
R520	ERQ12HJ330P	RES F 33-J-1/2W	⚠
R521	EROS2THF2702	RES M 27k-f-1/4w	⚠
R522	EROS2THF7681	RES M 7.68k-f-1/4w	⚠
R523	ERDS2TJ275T	RES C 2.7MEG-J-1/4W	
R525	ERJ6GEYJ152V	RES M 1.5K-J-1/10W	
R534	EROS2THF1203	RES M 120K-F-1/4W	
R535	ERDS2TJ392T	RES C 3.9K-J-1/4W	
R541	ERDS2TJ563T	RES C 56K-J-1/4W	
R550	EROS2THF1002	RES M 10K-F-1/4W	
R560	ERJ6GEYJ101V	RES M 100-J-1/10W	
R561	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R562	ERJ6GEYJ104V	RES M 100K-J-1/10W	
R621	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R622	ERJ6GEYJ152V	RES M 1.5K-J-1/10W	
R624	ERJ6GEYJ101V	RES M 100-J-1/10W	
R643	ERJ6GEYJ101V	RES M 100-J-1/10W	
R653	ERDS2TJ101T	RES C 100-J-1/4W	
R654	ERDS2TJ184T	RES C 180K-J-1/4W	
R655	ERDS2TJ184T	RES C 180K-J-1/4W	
R704	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R706	ERDS1FJ680T	RES C 68-J-1/2W	
R708	ERF5AK4R7H	RES W 4.7-K-5W	
R805	ERDS2TJ101T	RES C 100-J-1/4W	
R808	ERX12SZJR12P	RES M .12-J-1/2W	
R809	ERJ6GEYJ225V	RES M 2.2M-J-1/10W	
R810	ERX12SZJR12P	RES M .12-J-1/2W	
R811	ERX12SZJR12P	RES M .12-J-1/2W	
R812	ERDS2TJ103T	RES C 10K-J-1/4W	
R813	ERDS1FJ561T	RES C 560-J-1/2W	
R814	ERDS2TJ4R7T	RES C 4.7-J-1/4W	
R815	ERJ6GEYJ301V	RES M 300-J-1/10W	
R816	ERDS2TJ471T	RES C 470-J-1/4W	
R817	ERJ6ENF2001V	RES M 2K-F-1/10W	
R818	ERDS1FJ100T	RES C 10-J-1/2W	
R820	ERDS1FJ470T	RES C 47-J-1/2W	
R822	ERJ6GEYJ222V	RES M 2.2K-J-1/10W	
R832	ERD75TAJ825	RES C 8.2MEG-J-3/4W	⚠
R833	ERJ6GEYJ101V	RES M 100-J-1/10W	
R835	ERDS2TJ101T	RES C 100-J-1/4W	
R836	ERJ6GEYJ101V	RES M 100-J-1/10W	
R839	ERJ6GEYJ222V	RES M 2.2K-J-1/10W	
R840	ERJ6GEYJ101V	RES M 100-J-1/10W	
R846	ERDS2TJ223T	RES C 22K-J-1/4W	
R847	ERDS2TJ272T	RES C 2.7K-J-1/4W	
R857	ERX1SJ1R0P	RES M 1.0-J-1W	
R858	ERX1SJ1R0P	RES M 1.0-J-1W	
R859	ERDS2TJ103T	RES C 10K-J-1/4W	
R860	ERDS1FJ222T	RES C 2200-J-1/2W	

Ref. No.	Part No.	Part Name & Description	Remarks
R862	ERG3FJ333H	RES M 33K-J-3W	
R863	ERJ6ENF3001V	RES M 3K-F-1/10W	
R865	ERJ6GEYJ153V	RES M 15K-J-1/10W	
R866	ERJ6GEYJ332V	RES M 3.3K-J-1/10W	
R867	ERJ6GEYJ472V	RES M 4.7K-J-1/10W	
R888	ERJ6ENF1001V	RES M 1K-F-1/10W	
R889	ERJ6ENF1001V	RES M 1K-F-1/10W	
R893	ERJ6ENF1001V	RES M 1K-F-1/10W	
R895	ERJ6GEYJ100V	RES M 10-J-1/10W	
R896	ERJ6ENF1001V	RES M 1K-F-1/10W	
R897	ERJ6ENF3001V	RES M 3K-F-1/10W	
R901	ERDS2FJ122T	RES C 1.2K-J-1/2W	
R902	ERDS2TJ103T	RES C 10K-J-1/4W	
R903	ERDS2TJ683T	RES C 68K-J-1/4W	
R904	ERDS2TJ683T	RES C 68K-J-1/4W	
R905	ERDS2TJ103T	RES C 10K-J-1/4W	
R906	ERDS2TJ122T	RES C 1.2K-J-1/4W	
R907	ERDS1FVJ390T	RES C 39-J-1/2W	
R908	ERDS1FVJ390T	RES C 39-J-1/2W	
R909	ERDS1FVJ8R2T	RES C 8.2-J-1/2W	
R910	ERDS2TJ8R2T	RES C 8.2-J-1/4W	
R911	ERG3SJS221H	RES M 220-J-3W	
R912	ERDS2TJ681T	RES C 680-J-1/4W	
R913	ERDS1FVJ152T	RES C 1.5K-J-1/2W	
R914	ERDS1FVJ152T	RES C 1.5K-J-1/2W	
R915	ERQ14AJ220P	RES F 22-J-1/4W	
R916	ERQ14AJ220P	RES F 22-J-1/4W	
R917	ERQ14AJ100P	RES F 10-J-1/4W	
R925	ERDS2TJ151T	RES C 150-J-1/4W	
R926	ERDS2TJ151T	RES C 150-J-1/4W	
R928	ERQ14AJ220P	RES F 22-J-1/4W	
R929	ERDS2TJ101T	RES C 100-J-1/4W	
R930	ERJ6GEYJ100V	RES M 10-J-1/10W	
R930	ERJ6GEYJ330V	RES M 33-J-1/10W	
R931	ERJ6GEYJ101V	RES M 100-J-1/10W	
R932	ERJ6GEYJ273V	RES M 27K-J-1/10W	
R933	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R934	ERJ6GEYJ153V	RES M 15K-J-1/10W	
R935	ERJ6GEYJ822V	RES M 8.2K-J-1/10W	
R936	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R937	ERJ6GEYJ471V	RES M 470-J-1/10W	
R938	ERJ6GEYJ391V	RES M 390-J-1/10W	
R939	ERJ6GEYJ470V	RES M 47-J-1/10W	
R942	ERDS1FVJ152T	RES C 1.5K-J-1/2W	
R943	ERDS1FVJ152T	RES C 1.5K-J-1/2W	
R944	ERDS2TJ471T	RES C 470-J-1/4W	
R945	ERDS2TJ471T	RES C 470-J-1/4W	
R946	ERQ14AJ100P	RES F 10-J-1/4W	
R947	ERQ14AJ220P	RES F 22-J-1/4W	
R948	ERDS2FJ122T	RES C 1.2K-J-1/2W	
R949	ERDS2TJ103T	RES C 10K-J-1/4W	
R950	ERDS2TJ683T	RES C 68K-J-1/4W	
R951	ERDS2TJ683T	RES C 68K-J-1/4W	
R952	ERDS2TJ103T	RES C 10K-J-1/4W	
R953	ERDS2TJ122T	RES C 1.2K-J-1/4W	
R954	ERDS1FVJ390T	RES C 39-J-1/2W	
R955	ERDS1FVJ390T	RES C 39-J-1/2W	
R956	ERDS1FVJ8R2T	RES C 8.2-J-1/2W	
R957	ERDS2TJ8R2T	RES C 8.2-J-1/4W	
R958	ERG3SJS221H	RES M 220-J-3W	
R959	ERDS2TJ471T	RES C 470-J-1/4W	
R961	ERDS2FJ122T	RES C 1.2K-J-1/2W	
R962	ERDS2TJ103T	RES C 10K-J-1/4W	
R963	ERDS2TJ683T	RES C 68K-J-1/4W	
R964	ERDS2TJ683T	RES C 68K-J-1/4W	
R965	ERDS2TJ103T	RES C 10K-J-1/4W	
R966	ERDS2TJ122T	RES C 1.2K-J-1/4W	
R967	ERDS1FVJ390T	RES C 39-J-1/2W	
R968	ERDS1FVJ390T	RES C 39-J-1/2W	
R969	ERDS1FVJ8R2T	RES C 8.2-J-1/2W	
R970	ERDS2TJ8R2T	RES C 8.2-J-1/4W	
R971	ERG3SJS221H	RES M 220-J-3W	
R972	ERDS2TJ681T	RES C 680-J-1/4W	
R973	ERDS1FVJ152T	RES C 1.5K-J-1/2W	
R974	ERDS1FVJ152T	RES C 1.5K-J-1/2W	
R975	ERQ14AJ100P	RES F 10-J-1/4W	
R976	ERQ14AJ220P	RES F 22-J-1/4W	
R978	ERQ14AJ220P	RES F 22-J-1/4W	
R1502	ERJ6GEYJ222V	RES M 2.2K-J-1/10W	
R1503	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R1504	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R1505	ERDS2TJ102T	RES C 1K-J-1/4W	
R1506	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R1507	ERG3SJD152L	RES M 1.5K-J-3W	
R1508	ERJ6GEYJ152V	RES M 1.5K-J-1/10W	
R1509	ERDS2TJ102T	RES C 1K-J-1/4W	
R1510	ERG2SJD333L	RES M 33K-J-2W	
R1511	ERG2SJD333L	RES M 33K-J-2W	
R1512	ERJ6ENF2201V	RES M 2.2K-F-1/10W	
R1514	ERG2SJD333L	RES M 33K-J-2W	
R1515	ERJ6ENF1001V	RES M 1K-F-1/10W	
R1516	ERJ6GEYJ101V	RES M 100-J-1/10W	
R1517	ERJ6ENF3571V	RES M 3.57K-F-1/10W	
R1518	ERG2SJD333L	RES M 33K-J-2W	
R1519	ERDS2TJ101T	RES C 100-J-1/4W	
R1520	ERDS2TJ221T	RES C 220-J-1/4W	
R1521	EROS2THF1500	RES M 150-F-1/4W	
R1522	ERC12GK103D	RES C 10K-K-1/2W	
R1523	ERDS2TJ104T	RES C 100K-J-1/4W	
R1524	EROS2THF1401	RES M 1.4K-F-1/4W	
R1527	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R1528	ERDS2TJ332T	RES C 3.3K-J-1/4W	
R1529	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R1532	ERJ6ENF2201V	RES M 2.2K-F-1/10W	
R1542	ERG2SJD333L	RES M 33K-J-2W	
R1544	ERJ6GEYJ471V	RES M 470-J-1/10W	
R1546	ERJ6GEYJ221V	RES M 220-J-1/10W	
R1599	ERJ6ENF9761V	RES M 9760-F-1/10W	
R2222	ERDS2TJ220T	RES C 22-J-1/4W	
R2223	ERDS2TJ220T	RES C 22-J-1/4W	
R2224	ERDS2TJ220T	RES C 22-J-1/4W	
R2225	ERDS2TJ220T	RES C 22-J-1/4W	
R2226	ERDS2TJ220T	RES C 22-J-1/4W	
R2227	ERDS2TJ220T	RES C 22-J-1/4W	
R2228	ERDS2TJ220T	RES C 22-J-1/4W	
R2229	ERDS2TJ220T	RES C 22-J-1/4W	
R2230	ERDS2TJ220T	RES C 22-J-1/4W	
R2231	ERDS2TJ220T	RES C 22-J-1/4W	
R2232	ERDS2TJ220T	RES C 22-J-1/4W	
R2233	ERDS2TJ220T	RES C 22-J-1/4W	
R2244	ERDS2TJ220T	RES C 22-J-1/4W	
R2301	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R2302	ERJ6GEYJ392V	RES M 3.9K-J-1/10W	
R2303	ERJ6GEYJ271V	RES M 270-J-1/10W	
R2304	ERJ6GEYJ473V	RES M 47K-J-1/10W	
R2305	ERJ6GEYJ223V	RES M 22K-J-1/10W	
R2308	ERJ6GEYJ183V	RES M 18K-J-1/10W	
R2313	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R2314	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R2315	ERJ6GEYJ122V	RES M 1.2K-J-1/10W	
R2316	ERJ6GEYJ122V	RES M 1.2K-J-1/10W	
R2324	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R2325	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R2326	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R2327	ERJ6GEYJ473V	RES M 47K-J-1/10W	
R2328	ERJ6GEYJ273V	RES M 27K-J-1/10W	
R2329	ERJ6GEYJ472V	RES M 4.7K-J-1/10W	
R2332	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R2334	ERJ6ENF1501V	RES M 1.5K-F-1/10W	
R2335	ERJ6ENF1501V	RES M 1.5K-F-1/10W	
R2336	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R2337	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R2339	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R2342	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R2345	ERJ6GEYJ273V	RES M 27K-J-1/10W	
R2346	ERJ6GEYJ472V	RES M 4.7K-J-1/10W	

Ref. No.	Part No.	Part Name & Description	Remarks
R2348	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R2349	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R2351	ERJ6GEYJ473V	RES M 47K-J-1/10W	
R2352	ERJ6GEYJ472V	RES M 4.7K-J-1/10W	
R2353	ERJ6ENF4701V	RES M 4.7K-F-1/10W	
R2354	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R2355	ERJ6GEYJ683V	RES M 68K-J-1/10W	
R2356	ERJ6GEYJ223V	RES M 22K-J-1/10W	
R2357	ERJ6ENF1303V	RES M 130K-F-1/10W	
R2358	ERJ6GEYJ223V	RES M 22K-J-1/10W	
R2359	ERJ6GEYJ683V	RES M 68K-J-1/10W	
R2360	ERJ6ENF4701V	RES M 4.7K-F-1/10W	
R2361	ERJ6ENF1202V	RES.M 1.2K-F-1/10W	
R2362	ERJ12YJ101U	RES M 100-J-1/2W	
R2363	ERJ6ENF5232V	RES M 5.32K-F-1/10W	
R2364	ERJ6ENF1202V	RES.M 1.2K-F-1/10W	
R2365	ERJ6ENF1202V	RES.M 1.2K-F-1/10W	
R2366	ERJ6ENF1202V	RES.M 1.2K-F-1/10W	
R2367	ERJ12YJ101U	RES M 100-J-1/2W	
R2368	ERJ6ENF5232V	RES M 5.32K-F-1/10W	
R2371	ERJ6GEYJ101V	RES M 100-J-1/10W	
R2372	ERJ6GEYJ101V	RES M 100-J-1/10W	
R2373	ERJ6GEYJ101V	RES M 100-J-1/10W	
R2374	ERJ6GEYJ220V	RES M 22-J-1/10W	
R2375	ERJ6GEYJ220V	RES M 22-J-1/10W	
R2376	ERDS2TJ220T	RES C 22-J-1/4W	
R2377	ERDS2TJ220T	RES C 22-J-1/4W	
R2378	ERDS2TJ220T	RES C 22-J-1/4W	
R2379	ERDS2TJ220T	RES C 22-J-1/4W	
R2380	ERDS2TJ220T	RES C 22-J-1/4W	
R2381	ERDS2TJ220T	RES C 22-J-1/4W	
R2386	ERJ6GEYJ101V	RES M 100-J-1/10W	
R2402	ERJ6GEYJ101V	RES M 100-J-1/10W	
R2407	ERDS2TJ220T	RES C 22-J-1/4W	
R2408	ERDS2TJ220T	RES C 22-J-1/4W	
R2409	ERDS2TJ220T	RES C 22-J-1/4W	
R2410	ERDS2TJ220T	RES C 22-J-1/4W	
R2411	ERDS2TJ220T	RES C 22-J-1/4W	
R2412	ERDS2TJ220T	RES C 22-J-1/4W	
R2413	ERDS2TJ220T	RES C 22-J-1/4W	
R2414	ERDS2TJ220T	RES C 22-J-1/4W	
R2419	ERJ6GEYJ221V	RES M 220-J-1/10W	
R2420	ERJ6GEYJ101V	RES M 100-J-1/10W	
R2421	ERJ6GEYJ101V	RES M 100-J-1/10W	
R2422	ERJ6GEYJ101V	RES M 100-J-1/10W	
R2423	ERJ6GEYJ101V	RES M 100-J-1/10W	
R2424	ERJ6GEYJ101V	RES M 100-J-1/10W	
R2425	ERJ6GEYJ101V	RES M 100-J-1/10W	
R2426	ERJ6GEYJ101V	RES M 100-J-1/10W	
R2451	ERJ6GEYJ681V	RES M 680-J-1/10W	
R2452	ERJ6GEYJ681V	RES M 680-J-1/10W	
R2456	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R2457	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R2459	ERJ6GEYJ123V	RES M 12K-J-1/10W	
R2460	ERJ6GEYJ101V	RES M 100-J-1/10W	
R2461	ERJ6GEYJ101V	RES M 100-J-1/10W	
R2501	ERJ6ENF2700V	RES M 270-F-1/10W	
R2502	ERJ6ENF4700V	RES M 470-F-1/10W	
R2503	ERJ6ENF4700V	RES M 470-F-1/10W	
R2504	ERJ6GEYJ221V	RES M 220-J-1/10W	
R2505	ERJ6ENF33R0V	RES M 33.0K-F-1/10W	
R2506	ERJ6ENF33R0V	RES M 33.0K-F-1/10W	
R2507	ERJ6GEYJ221V	RES M 220-J-1/10W	
R2508	ERJ6ENF4700V	RES M 470-F-1/10W	
R2509	ERJ6ENF2700V	RES M 270-F-1/10W	
R2510	ERJ6ENF4700V	RES M 470-F-1/10W	
R2511	ERJ6ENF2700V	RES M 270-F-1/10W	
R2512	ERJ6ENF4700V	RES M 470-F-1/10W	
R2513	ERJ6ENF33R0V	RES M 33.0K-F-1/10W	
R2514	ERJ6ENF4700V	RES M 470-F-1/10W	
R2515	ERJ6GEYJ221V	RES M 220-J-1/10W	
R2516	ERJ6GEYJ470V	RES M 47-J-1/10W	
R2517	ERDS2TJ182T	RES C 1.8K-J-1/4W	
R2518	ERDS2TJ330T	RES C 33-J-1/4W	
R2519	ERJ6GEYJ100V	RES M 10-J-1/10W	
R2520	ERJ6GEYJ100V	RES M 10-J-1/10W	
R2537	ERJ6GEYJ122V	RES M 1.2K-J-1/10W	
R2538	ERJ6GEYJ122V	RES M 1.2K-J-1/10W	
R2539	ERJ6GEYJ122V	RES M 1.2K-J-1/10W	
R2541	ERJ6GEYJ122V	RES M 1.2K-J-1/10W	
R2542	ERJ6GEYJ122V	RES M 1.2K-J-1/10W	
R2543	ERJ6GEYJ122V	RES M 1.2K-J-1/10W	
R2568	ERJ6ENF6801V	RES M 6.8K-F-1/10W	
R2569	ERJ6ENF8201V	RES M 8.2K-F-1/10W	
R2570	ERJ6GEYJ100V	RES M 10-J-1/10W	
R2571	ERJ6GEYJ100V	RES M 10-J-1/10W	
R2573	ERJ6GEYJ221V	RES M 220-J-1/10W	
R2576	ERJ6GEYJ181V	RES M 180-J-1/10W	
R2578	ERJ6GEYJ100V	RES M 10-J-1/10W	
R2580	ERJ6GEYJ221V	RES M 220-J-1/10W	
R2583	ERJ6GEYJ181V	RES M 180-J-1/10W	
R2584	ERJ6GEYJ100V	RES M 10-J-1/10W	
R2590	ERJ6GEYJ181V	RES M 180-J-1/10W	
R2801	ERDS2TJ223T	RES C 22K-J-1/4W	
R2802	EROS2THF1502	RES M 15.0k-f-1/4w	
R2803	ERF2AK5R6	RES M 5.6-K-2W	
R2804	ERG2FJ393H	RES M 39K-J-2W	
R2806	ERDS2TJ184T	RES C 180K-J-1/4W	
R2807	ERDS2TJ102T	RES C 1K-J-1/4W	
R2808	ERDS2TJ102T	RES C 1K-J-1/4W	
R2810	ERDS2TJ823T	RES C 82K-J-1/4W	
R2811	EROS2THF7151	RES M 7.15K-F-1/4W	
R2813	EROS2THF2201	RES M 2.2k-f-1/4w	
R2814	ERG1FJS102E	RES M 1K-J-1W	
R2816	ERC12GK825C	RES C 820MEG-K-1/8W	
R2850	ERJ6GEYJ472V	RES M 4.7K-J-1/10W	
R2851	ERJ6ENF1001V	RES M 1K-F-1/10W	
R2852	ERJ6ENF4530V	RES M 453-F-1/10W	
R2853	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R2854	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R2855	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R2856	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R2858	ERDS2TJ272T	RES C 2.7K-J-1/4W	
R2859	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R2860	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R3004	ERJ6ENF75R0V	RES M 75.0-F-1/10W	
R3008	ERJ6ENF75R0V	RES M 75.0-F-1/10W	
R3010	ERJ6GEYJ184V	RES M 180K-J-1/10W	
R3011	ERJ6GEYJ184V	RES M 180K-J-1/10W	
R3013	ERJ6GEYJ184V	RES M 180K-J-1/10W	
R3014	ERJ6GEYJ184V	RES M 180K-J-1/10W	
R3015	ERJ6GEYJ184V	RES M 180K-J-1/10W	
R3016	ERJ6GEYJ184V	RES M 180K-J-1/10W	
R3024	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R3026	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R3028	ERJ6GEYJ184V	RES M 180K-J-1/10W	
R3029	ERJ6GEYJ184V	RES M 180K-J-1/10W	
R3035	ERJ6GEYJ184V	RES M 180K-J-1/10W	
R3036	ERJ6GEYJ184V	RES M 180K-J-1/10W	
R3044	ERJ6GEYJ222V	RES M 2.2K-J-1/10W	
R3045	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R3046	ERJ6GEYJ222V	RES M 2.2K-J-1/10W	
R3047	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R3048	ERJ6GEYJ152V	RES M 1.5K-J-1/10W	
R3049	ERJ6GEYJ104V	RES M 100K-J-1/10W	
R7001	ERG2FJ820H	RES M 82-J-2W	
R7002	ERG2FJ121H	RES M 120-J-2W	
R7003	ERG2FJ820H	RES M 82-J-2W	
R7004	ERG2FJ121H	RES M 120-J-2W	
R7005	ERG2FJ820H	RES M 82-J-2W	
R7006	ERG2FJ121H	RES M 120-J-2W	
R7011	ERX2FJ2R2H	RES M 2.2-J-2W	
R7012	ERX2FJ2R2H	RES M 2.2-J-2W	
R7013	ERX2FJ2R2H	RES M 2.2-J-2W	
R7014	ERX2FJ2R2H	RES M 2.2-J-2W	
R7015	ERX2FJ2R2H	RES M 2.2-J-2W	

Ref. No.	Part No.	Part Name & Description	Remarks
R7016	ERX2FJ2R2H	RES M 2.2-J-2W	
R7023	ERJ6GEYJ273V	RES M 27K-J-1/10W	
R7024	ERJ6GEYJ472V	RES M 4.7K-J-1/10W	
R7026	ERJ6GEYJ222V	RES M 2.2K-J-1/10W	
R7027	ERJ6GEYJ332V	RES M 3.3K-J-1/10W	
R7029	ERJ6GEYJ332V	RES M 3.3K-J-1/10W	
R7030	ERJ6GEYJ222V	RES M 2.2K-J-1/10W	
R7031	ERJ6GEYJ222V	RES M 2.2K-J-1/10W	
R7032	ERJ6GEYJ332V	RES M 3.3K-J-1/10W	
R7034	ERJ6GEYJ273V	RES M 27K-J-1/10W	
R7035	ERJ6GEYJ472V	RES M 4.7K-J-1/10W	
R7036	ERJ6GEYJ222V	RES M 2.2K-J-1/10W	
R7037	ERJ6GEYJ222V	RES M 2.2K-J-1/10W	
R7038	ERJ6GEYJ222V	RES M 2.2K-J-1/10W	
R7040	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R7041	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R7045	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R7046	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R7047	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R7048	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R7052	ERJ6GEYJ332V	RES M 3.3K-J-1/10W	
R7055	ERJ6GEYJ332V	RES M 3.3K-J-1/10W	
R7058	ERJ6GEYJ332V	RES M 3.3K-J-1/10W	
R7059	ERJ6GEYJ104V	RES M 100K-J-1/10W	
R7060	ERX1SJR27P	RES M .27-J-1W	
R7061	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R7062	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R7063	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R7064	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R7065	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R7066	ERX1SJR27P	RES M .27-J-1W	
SWITCHES			
S010	EVQPBD05R	SWITCH	
S011	EVQPBD05R	SWITCH	
S012	EVQPBD05R	SWITCH	
S013	EVQPBD05R	SWITCH	
S014	EVQPBD05R	SWITCH	
S015	EVQPBD05R	SWITCH	
S016	EVQPBD05R	SWITCH	
S017	EVQPBD05R	SWITCH	
TRANSFORMERS			
T501	ETH19K204AZ	TRANSFORMER PT-47WXD63G	
T501	ETH19K204AZ	TRANSFORMER PT-53WXD63G	
T551	KFT7AA334F1	FLYBACK TRANSFORMER	⚠
T801	ETS42AD495AD	TRANSFORMER	⚠
OTHERS			
TNR001	ENG36620G	TUNER	⚠
TNR8000	ENGE6111D	TUNER (DT-BOARD)	⚠
M001	TSX2AA0381	A/C LINE CORD	⚠
1	TXFCRT27GSER	CRT (BLUE)	
	TXFCRT28GSER	CRT (GREEN)	
	TXFCRT29GSER	CRT (RED)	
M002	K3B10CA00006	CRT SOCKET	⚠
2	KDY2ASF83F	DEFLECTION YOKE	⚠
M003	TXF3A01ECV	DAG GND	
3	TKG2AF020-1	A/B LENS PT-47WXD63G	
	TKG2AF021-1	A/B LENS PT-53WXD63G	
4	TKG2AA50091	MIRROR GLASS PT-47WXD63G	
	TKG2AA50111	MIRROR GLASS PT-53WXD63G	
5	TMW2AX0041B	MIRROR BRACKET (SIDE)	
6	TMW2AX0161	MIRROR BRACKET (TOP)	
7	TKG2AD00071	PROTECTIVE SCREEN PANEL PT-47WXD63G	
	TKG2AD00091	PROTECTIVE SCREEN PANEL PT-53WXD63G	
8	TKG2AH50381	LENTICULAR SCREEN PT-53WXD63G	
	TKG2AH50461	LENTICULAR SCREEN PT-47WXD63G	
9	TKG2AH50611	FRESNEL SCREEN PT-53WXD63G	
	TKG2AH50681	FRESNEL SCREEN PT-47WXD63G	
10	TMW2AX0131	SCREEN BRACKET PT-47WXD63G	
	TMW2AX0171	SCREEN BRACKET PT-53WXD63G	
11	TMW2AX0181	CORNER BRACKET PT-53WXD63G	
12	TKU2AC2601S	BACK CABINET PT-53WXD63G	
	TKU2AC2201S	BACK CABINET PT-47WXD63G	
13	TKD2AX0324S	CABINET FRONT BOARD	
14	TKY2AA3003S	FRONT CABINET PT-47WXD63G	
	TKY2AA3405AS	FRONT CABINET PT-53WXD63G	
15	TKB2AA0174S	WOOD CABINET PT-47WXD63G	
	TKB2AA0203S	WOOD CABINET PT-53WXD63G	
M004	TBL2AH30071	CASTER	
16	TKD2AX2572S	INNER BARRIER BOARD	
17	TKU2AA03901	LOWER BACK COVER	
18	TAS2AA0022	SPEAKER (TWEETER) PT-47WXD63G	
	EASJ6PH05A3	SPEAKER (TWEETER) PT-53WXD63G	
19	TAS2AA0027	SPEAKER (WOOFER) PT-47WXD63G	
	EAST14PL31A6	SPEAKER (WOOFER) PT-53WXD63G	
20	TKP2AA0626S	SPEAKER GRILLE	
21	TBM2AA0012	PANASONIC BADGE	
22	KFT7CP336F	DISTRIBUTOR	⚠
23	D9ZZ00000079	FOCUS PACK	⚠
24	UDQFSEH58F	FAN	
25	TXFKP20GSER	REAR BRACKET	
26	TKD2AX1857S	FRONT PANEL	
27	TXFKP19GSER	DOOR PANEL	
28	TXFKP18GSER	CONTROL PANEL	
29	TBX2AA2801G	BUTTON KEYPAD	
30	TKP2AA0921	LED PANEL	
31	TEK6935	LATCH	
M005	ENPE633	SPLITTER	
M006	TMM2AE10171	GROMMET SQUARE	
JG1	K1NA68B00035	PC-BOARD CONNECTOR	
JG2	K1NA12B00002	SD-CARD CONNECTOR	
JK1001	TJB2AA0482	FRONT A/V TERMINAL	
JK3001	TJB2AA0251	REAR A/V TERMINAL 12 PIN	
JK3002	TJB2AA0241	REAR A/V TERMINAL 10 PIN	
JK5001	K1FA119E0001	HDMI CONNECTOR	
JK5002	TJB2AA0411	AUDIO IN TERMINAL 2 PIN	
JK8002	K1NA68B00036	POD CONNECTOR	
JK8003	K1NA12E00001	SD SERVICE CARD CONNECTOR	
OTHER ACCESORIES			
M007	TQB2AA0474	OWNERS MANUAL	
M008	EUR7627Z10	REMOTE CONTROL	
M009	UR76EC2703A	REMOTE CONTROL BATTERY COVER	

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